REPORT

OF THE

INDIAN COAL COMMITTEE

1925

Volume I

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CENTRAL PUBLICATION BRANCH
1925

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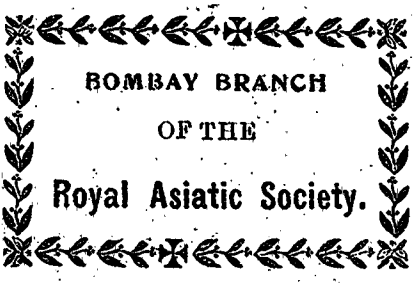

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	Rs.
(1) Salaries of members and staff	57,617
(2) Travelling allowance (including daily allowance) .	9,701
(3) Printing (including cost of Maps) . . .	7,954
(4) Contingencies	890
TOTAL .	76,162

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CHAPTER I.

Introductory.

Appointment of Committee and terms of reference.

1. Our Committee was appointed by the Governor General in Council under the Resolution of the Department of Commerce No. 47-T. (5), dated the 20th September 1924, which is reproduced below—

"1. As announced in the Legislative Assembly on the 15th March last in view of the Resolution adopted by the Assembly recommending on economic grounds the imposition of a countervailing duty on South African coal imported into India, the Government of India decided to refer to the Tariff Board for investigation the question whether the Indian coal trade is in need of protection either against coal from South Africa or against imports of foreign coal generally, and if so, whether, having regard to all the interests concerned, protection should be accorded to it.

2. Imports of coal into India are relatively small, and are steadily diminishing in quantity. The average production of coal in India during the last three years has been about 19 million tons per annum. Imports during the same period were:—

	Thousands of tons.
1921-22	1,489
1922-23	882
1923-24	592

The returns for the first four months of the present year, 1924-25, show a further rapid decrease in imports as compared with the first four months of previous years, *viz.*:—

	Thousands of tons.
1922 April to July	404
1923 April to July	245
1924 April to July	128

Total imports in the two years preceding the war were:—

	Thousands of tons.
1912-13	643
1913-14	532

Total imports have thus now fallen to pre-war level.

3. At the same time, exports of coal from India to other countries have seriously contracted. Export figures for the years before and after the war are:—

	Thousands of tons.
1912-13	879
1913-14	722
1920-21	1,143
1921-22	113
1922-23	98

During the present year, there has been some recovery, exports for the four months ending the 31st July last amounting to 80,000 tons.

4. It is evident from these figures that the competition from which the Indian coal industry is now suffering is not so much in the Indian market as in overseas markets, such as Colombo and Singapore. It is also evident that overseas markets cannot be recovered by the protection of the Indian market. They can only be recovered by improving and grading the quality of coal for export, and by reducing the cost of production and transport. At the same time, it is possible that the measures which are necessary to recover the overseas market, may be sufficient without further protection to enable Indian coal to meet competition in the home market.

5. The grading and transport of coal are highly technical subjects, with which the Tariff Board is not fully equipped to deal. The Government of India have, therefore, decided to appoint an expert Committee, representative of the interests concerned, to consider this side of the question, with the following terms of reference:

"To enquire and report

(1) generally what measures can be taken by Government, by the coal trade, by the railways and by the ports, whether singly or in combination, to stimulate the export of suitable coal from Calcutta to Indian and foreign ports; and

(2) in particular, whether effective measures can be taken for the pooling and grading of Indian coal for export and for bunkering, and how the cost of such measures should be met."

6. The Committee will be composed as follows:—

President.

F. Noyce, Esq., C.S.I., C.B.E., I.C.S.

Members.

The Chief Mining Engineer to the Railway Board.*

F. C. Legge, Esq., C.B.E., Director of Wagon Interchange.

S. C. Stuart-Williams, Esq., Chairman, Calcutta Port Trust.

A. A. F. Bray, Esq., Chairman, Indian Mining Association.

W. C. Banerjee, Esq., Vice-Chairman, Indian Mining Federation.

* Mr. J. R. Harrison until November 10th, 1924, and thereafter Mr. C. S. Whitworth.

Sir Rajendra Nath Mookerjee, K.C.I.E., K.C.V.O. of Messrs. Martin & Co., Calcutta.

The Hon'ble Mr. J. W. A. Bell of Messrs. Mackinnon, Mackenzie & Co., Calcutta.

Secretary.

H. P. V. Townend, Esq., I.C.S.

It is hoped that a Committee so composed will be able to devise practical measures, acceptable to all interests concerned, for achieving the objects in view.

7. The Committee will hold its enquiry at Calcutta. It may find it necessary to tour in the coalfields, but for visits to other ports the Government of India think that sub-committees might be appointed. But this question will be left to the decision of the Committee itself. The Committee will assemble in October, and report to the Government of India at the earliest possible date.

8. The recommendations of the Committee will necessarily influence the Tariff Board's investigation of the question whether the Indian coal trade is in need of protection. The Government of India, therefore, after consulting the Tariff Board, have decided to postpone this reference to the Tariff Board until after the Committee has reported."

Procedure, tours, and acknowledgments.

2. Owing to the absence on leave of several of the members, it was not till October 22nd, 1924, that we actually met. Our first work was then to draw up and issue a general questionnaire which dealt with the problem before us chiefly from the point of view of the producer and exporter of coal. Little could be done between its issue and the receipt of written replies, and the President therefore took the opportunity of paying a visit to the Jharia and Raniganj coalfields between October 29th and November 3rd, accompanied by Messrs. Banerjee, Harrison and Legge who had joined on October 27th and by the Secretary. On the day of their return to Calcutta, Mr. Stuart-Williams joined the Committee and a week later, on November 10th, Mr. Whitworth replaced Mr. Harrison who had been acting for him as Chief Mining Engineer to the Mining Board and as member of our Committee. Detailed questionnaires were then drawn up for the three railways which carry export coal and for the Commissioners of the Port of Calcutta; but our hopes of hearing the majority of the Calcutta witnesses before the end of November were disappointed owing to the non-receipt of replies to the general questionnaire. Only three witnesses had been examined before our sub-committee left to investigate conditions at Rangoon, Singapore and Colombo. The President, Mr. Legge and the Secretary sailed for Rangoon on November 21st and Messrs. Bell and Bray followed two days later. The sub-committee left Rangoon on November 29th and arrived at Singapore on December 4th after touching at Penang on their way. Leaving Mr. Bell at Singapore they sailed

on December 8th for Colombo where they arrived on December 14th: here they were joined by Mr. Banerjee who had been prevented by ill-health from accompanying them to Rangoon and Singapore. They left Colombo on December 18th and, after halting at Madras on their way, returned to Calcutta at the end of December. The Committee resumed the taking of evidence in Calcutta immediately after the Christmas holidays and had disposed of almost all the Calcutta witnesses before another sub-committee consisting of the President, Mr. Legge, Mr. Whitworth and the Secretary left for Bombay on January 30th. While they were in Bombay they had the assistance of Mr. N. N. Wadia, C.I.E., who was co-opted to the Committee on the nomination of the Bombay Mill Owners' Association. We would take this opportunity of expressing our thanks to him for the very valuable help given by him in this capacity. The President, Mr. Legge and the Secretary proceeded from Bombay to Karachi on February 6th, returning after a stay of four days there *vid* Delhi to Calcutta on February 17th. At Delhi they were joined by Mr. Bell. At all the places visited save Penang witnesses were examined and at all the sea-ports the ports were inspected. In the course of our enquiries we sat 43 days for the formal hearing of evidence during the course of which we examined 53 representatives of Railways, Port authorities and various associations connected with the coal trade either as producers or as consumers, and 55 individual witnesses, the majority of whom submitted written memoranda. We also received written memoranda from 14 gentlemen and associations, who were not orally examined. We desire to thank all concerned for the care and trouble taken by them in preparing evidence for us. Our thanks are also due to the Governments of the Straits Settlements and Ceylon and to the leading firms connected with the coal trade in Singapore, Penang and Colombo for the courtesy and cordiality with which they received us in those ports and for the valuable information relevant to our enquiries which they placed at our disposal. We are under special obligation to Mr. C. T. Wurtzburg of Messrs. Mansfield & Co., Singapore, the Chairman of the sub-committee which the Singapore Chamber of Commerce was good enough to appoint to deal with our questionnaire, and to Mr. A. R. Quarme of Messrs. Mackinnon, Mackenzie & Co., Colombo, to whose preliminary arrangements the success of our visit to that port was largely due. Arrangements for our sittings at Calcutta, Bombay, Madras and Karachi were made by the Bengal Chamber of Commerce, the Madras Chamber of Commerce, the Bombay Mill Owners' Association and the Karachi Chamber of Commerce, whom we have to thank for the help rendered in this and other ways. We are also much indebted to the Director-General of Commercial Intelligence, and to the authorities of the railways over which we travelled.

Statistics quoted for production and export of Indian coal.

3. We have attached to our report a table, Appendix I, which will show that the coal industry in India is the growth of the last forty years and that the development of the coal trade and of

export in particular has been especially rapid since the beginning of the present century, when the annual production of coal in India was considerably less than a quarter of the present figure. We give as Appendix II a table showing the exports of Indian coal to foreign countries. It may be well, at the outset, to emphasise the point that, owing to the geographical situation of the coalfields, the export trade in Indian coal is almost entirely confined to Calcutta. The coal passing through the port of Calcutta falls under three heads: coal exported to foreign countries, coal exported to other Indian ports including those which are not in British territory and bunker coal. We give as Appendices III and IV tables showing the total quantities of coal falling under each of these three heads. The following table summarises the position:—

Exports of coal from Calcutta.

Year.	Exports of coal to foreign countries.	Exports of coal coastwise to Indian ports.	Bunker coal. (a)	Total.	Exports on Government account.*	Total on Government and private account.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1910-11 . .	887,362	2,210,517	905,000	4,002,879	..	4,002,879
1911-12 . .	871,308	2,017,183	883,000	3,771,491	..	3,771,491
1912-13 . .	879,390	2,237,076	964,000	4,080,466	..	4,080,466
1913-14 . .	721,349	2,324,167	983,000	4,028,516	..	4,028,516
1914-15 . .	592,474	1,904,624	1,019,000	3,516,098	..	3,516,098
1915-16 . .	803,303	828,531	768,000	2,399,834	..	2,399,834
1916-17 . .	823,124	490,028	601,000	1,914,152	53	1,914,205
1917-18 . .	254,503	206,824	486,000	947,327	24	947,351
1918-19 . .	142,942	101,322	378,000	622,264	..	622,264
1919-20 . .	672,778	213,260	560,000	1,446,038	..	1,446,038
1920-21 . .	1,135,722	1,408,686	936,000	3,480,408	..	3,480,408
1921-22 . .	111,537	1,282,211	866,000	2,259,748	..	2,259,748
1922-23 . .	97,611	812,136	575,000	1,484,747	..	1,484,747
1923-24 . .	131,559	936,504	606,000	1,674,063	..	1,674,063

(a) Figures relate to the calendar year for 1910 onwards.

* From the early days of the war to the end of March, 1920, shipments on Government account made by the Mining Engineer and on R.I.M. account were excluded from the recorded statistics. Such shipments amounted to nearly 300,000 tons in 1917-18, 900,000 tons in 1918-19, and 366,000 tons in the eleven months ending February, 1920. Information for other years is not available.

Export of Indian coal to foreign countries.

4. It will be gathered from Appendix II that the exports of Indian coal to foreign countries began to be of real importance in the quinquennium ending with 1900 when they averaged 305,000 tons annually. The peak before the war was reached in

1906 with an export of a little over a million tons, and for the decade ending with 1915 the annual average was a little over three quarters of a million tons. The first two war years did not affect exports which began to fall only in 1917, when the shortage of shipping throughout the world began to tell upon them. In 1918 they reached their lowest point with 74,000 tons, but the end of the war brought a rapid expansion and the figure of 1,224,758 tons in 1920 was the highest ever recorded. In that year restrictions were imposed on exports with the effect of which we shall deal in a subsequent paragraph.

Export of Indian coal coastwise to Indian ports.

5. The exports of Indian coal coastwise to Indian ports, which, as will be seen from Appendix III, were in the neighbourhood of two million tons in the years immediately preceding the war, were at once affected by war-conditions because the railways provided alternative routes, except to Burma, over which coal could be carried without being exposed to risks arising from enemy action. The exports steadily fell therefore from 1914 onwards until in 1918-19 they reached their lowest figure of 101,000 tons. It was not until 1919-20 that they recovered to any extent but the figure of 1,400,000 tons for that year represents the high-water mark since the war. In 1921-22, there was a small decline which became still more marked in 1922-23. Since then there has been some recovery, but the exports of Bengal coal to other Indian ports are still less than half what they were in pre-war years. The evidence as to the quantities of coal handled by the railways and of the imports of foreign coal into Indian ports shows that this decline cannot be attributed to the fact that more Indian coal is now brought into these ports by rail. It is due to the increased competition of coal imported from other countries, and a statement showing the quantity and value of foreign coal imported into British India is therefore given as Appendix V.

Bunker coal at Calcutta.

6. Appendix IV shows that the figure of 1,058,000 tons of coal bunkered at Calcutta in 1908 is the highest ever reached, although not greatly in excess of that for 1914 when bunkers for foreign ports were nearly 100,000 tons higher than they had ever been before. In 1918 the lowest point for this century was reached for coal bunkered for foreign and Indian ports alike. There was a marked recovery in the three subsequent years especially in the figures of bunker coal for foreign ports, but there was again a decline in 1922-23 and the quantity of coal now bunkered at Calcutta is for foreign ports about two-thirds, and for Indian ports considerably less than half, of the pre-war quantities. The reduction in the number of vessels entering and leaving the port which is brought out in the table below goes far to explain this decline but, on the average amount bunkered per steamer, Calcutta would appear to have declined somewhat in popularity as a bunkering port when the increased size of the steamers visiting the port is taken into consideration.

Year.	Steamers entering.	Steamers leaving.	Exports of bunker coal from Calcutta.	Average per vessel entering the port.
			Tons.	Tons.
1911 . . .	1,710	1,700	883,805	516
1912 . . .	1,745	1,745	963,997	552
1913 . . .	1,629	1,633	982,514	603
1914 . . .	1,488	1,496	1,018,753	683
		Post-war years.		
1919 . . .	1,100	1,090	581,718	528
1920 . . .	1,391	1,341	846,013	608
1921 . . .	1,274	1,302	865,b60	742
1922 . . .	1,167	1,177	575,140	492
1923 . . .	1,145	1,148	606,132	538
1924 . . .	1,224	1,211	698,000	561

Embargo on the export of coal

7. The rapid expansion in the demand for coal after the war resulted in a very heavy strain on the capacity of the railways in 1919 and 1920. So large a proportion of the wagon supply of the country was taken up by coal traffic that trade in general was greatly hampered and many, especially the smaller, industries of India were suffering severely from the difficulty of obtaining coal. In July, 1920, therefore, the Government of India, following the example of the United Kingdom and of South Africa, decided to prohibit the export of coal from India except under license with effect from July the 24th and to refuse, from September the 1st, the preference which had till then been given by the railways to bunker coal for Indian ports. The object of the latter measure was to economise wagons by diverting bunker coal intended for Bombay, Madras or Karachi from the all-rail route to that which had been followed before the war, when coal had been sent by rail to the Kidderpore docks and thence by coasting steamers to its destination. The prohibition of exports except under license was introduced partly to prevent India from being depleted of coal and partly to ensure that the supply of Indian coal by sea to Indian ports should not be hindered by the limited capacity of the Kidderpore docks. A rationing scheme was drawn up and, on the principle that supplies of Indian coal should be allowed only to important bunkering ports in the vicinity of India, exports were permitted on the following scale:—

Railway coal.	Tons per mensem.
Ceylon Government Railways . .	10,000

Bunker coal.	Tons per mensem.
Colombo	50,000
Aden	10,000
Sabang	5,000
Singapore	15,000

It should be emphasised that the scheme had the entire approval of the commercial community.

Five months' experience of the working of the scheme gave rise to grave doubts whether it had been sufficiently drastic. Stocks of railway coal diminished and the complaints of difficulties experienced by industries continued. The difficulties of the situation were enhanced by poor raisings in the coalfields, which in 1920 were some 4½ million tons less than they had been in 1919, and by inadequate railway facilities for the transport of Bengal coal. As the available supplies of Bengal coal were not considered sufficient for Indian requirements and there appeared to be no possibility of effecting an immediate improvement in railway facilities, the Government of India, after consultation with the commercial community, decided on further restrictions. They prohibited export to Sabang and Singapore from the commencement, and to Aden from the end of January, 1921, but they allowed time for making other arrangements to Colombo which was more dependent than other ports outside India on Indian bunker coal. Exports were therefore allowed to Colombo on a diminished scale till the end of March, but were then entirely prohibited with the exception of supplies for the Colombo Gas and Water Company, and, on a reduced scale, for the Ceylon Government Railways. At the same time bunkering at Indian ports was restricted from the commencement of January, 1921, steamers proceeding westwards being allowed supplies to carry them as far as Port Said and three days beyond it and those proceeding eastwards being restricted on similar lines. In April, 1922, all restrictions on the export of cargo or bunker coal by sea to customs ports in India were removed, but the shipment of coal out of British India as cargo was still prohibited except when made by the Crown, and the bunkering of vessels sailing to foreign ports continued to be governed by licenses issued by the Collector of Customs. The embargo was entirely removed from January 1st, 1923.

Effects of the embargo on overseas markets.

8. The inevitable result of the embargo was the disappearance of Indian coal from overseas markets for the time being. It has been suggested to us that one of the reasons why Indian coal before the embargo held a position to which it was hardly entitled on its merits was the inertia which makes established business relationships difficult to break and that, even if the embargo had not intervened, the profound dissatisfaction aroused by the quality of the Indian coal exported immediately after the war would have undoubtedly led, before long, to its complete disappearance from

overseas markets unless the Bengal coal trade had meanwhile radically reformed its methods. Be that as it may, the quality and price of the supplies obtained by these markets from other sources, and especially from South Africa, after the embargo was imposed, proved so satisfactory that the pre-war position has now been reversed and established business relationships are an obstacle to the re-introduction of Indian coal even in a market like Colombo where it once held a commanding position. In this connection, mention must be made of the strenuous efforts which have been made in recent years by the South African coal trade to capture overseas markets. As a result of the labours of a Coal Commission appointed in 1920 by the Government of the Union of South Africa to enquire into certain matters concerning the grading and pooling of South African coal, etc., action has been taken to prevent the use of any but the best coal for export or bunkering and to ensure the satisfactory condition of any coal so used. It must be recognised that their success has been such as to make the recovery of overseas markets by the Indian coal trade a task even more difficult than its exclusion from them for two years must in any case have made it.

General position in ports outside India.

9. It will be convenient, at this juncture, to review briefly the position in the ports outside India which in the period before the embargo imported large quantities of Indian coal. These are Penang, Singapore, Colombo, Sabang and Aden. At none of these ports is there any large import of coal for industrial purposes. A considerable amount is consumed by Port Trusts, by Gas, Electric or Tramway Companies and, in Colombo, by the Government Railways, but, with these exceptions, almost all the coal imported is used for bunkering purposes. Moreover the firms interested in the coal trade at these places are very few and some even of these few do not import or purchase coal on their own account but merely act as agents for houses in London where the contracts are arranged. These London houses, however, are naturally guided to a large extent by the information regarding quality and prices that is supplied by their local agents.

Penang.

10. Our enquiries at Penang showed that, whereas the stocks of coal held there used to be as high as 100,000 tons, they are now negligible. This is, in the main, due to the fact that the Federated Malay States Railways and the tin mines are now able to obtain from Malayan collieries all such coal as they require to supplement the supplies of wood on which they largely rely. Arrangements for the small quantities of coal required by coasting vessels coaling at Penang are made in Singapore and there is no direct import either from India or from elsewhere.

Singapore.

11. In Appendix VI, we give a table showing the imports of coal into the Straits Settlements since 1918. As may be gathered from the preceding paragraph, these may be taken for all practical purposes as repre-

senting imports into Singapore. It will be observed that the figures of imports in this and in the similar statements which we give for other ports differ considerably from those shown in Appendix II for exports from India to these ports. The difference may be due to cargoes being at sea when the returns were compiled and also to the diversion of cargoes to other ports after they had left Calcutta. The figures of imports are obviously the truest index to the correct state of affairs, but we have none the less considered it desirable to print Appendix II as it covers a longer series of years and contains more information than the statements for the particular ports. It will be seen from it that before the war the Straits Settlements provided a valuable outlet for Indian coal. The highest figure reached was 317,665 tons as long ago as 1906. The average for the five years ending with 1910 was 199,000 tons and that for the following quinquennium was 157,000 tons. Imports dwindled during the war period, as shown in Appendix VI, to 19,482 tons, but in 1920 again achieved their old level with 188,432 tons. The embargo, however, put a complete stop to them and it is still unfortunately true that Indian coal has, to all intents and purposes, disappeared from the Singapore market. It is much to be regretted that the only important cargo of Indian coal sent there recently caught fire on board ship and that Singapore consumers had no opportunity of testing its real merits as compared with other coals. We deal with the question of comparative prices at length in the next chapter, but it may be mentioned here that no port in the East can draw its coal from more sources of supply than Singapore and that it will therefore be specially hard for Indian coal to regain anything like its old footing. In present conditions it is regarded as more expensive than any other and it is in addition handicapped most seriously by the general distrust which is felt regarding its quality. The opinion on this point expressed by the Singapore Chamber of Commerce is so important that we quote it in full. It is as follows:

"The general opinion of consumers is to the effect that the Indian coal up till now placed on the Singapore market does not compare favourably with good Japanese, South African or best Sumatra coal. The class of Indian coal imported is about equal to Borneo coal. There are, we believe, good Indian coals, but experience seems to show that since the pre-war period these have not been exported and, even taking pre-war standards, best Japanese and best Australian were both superior to best Indian according to general opinion locally. Of recent years South African coal has been found highly satisfactory and reliable and it is now an important factor in the Straits coal market."

The coal from the Netherlands East Indies has the advantage of close proximity and is besides of excellent quality. The collieries at Ombilin on the west coast of Sumatra are now producing 600,000 tons per annum of a coal which shows the extraordinary low ash-percentage of 2 per cent. The Boekit Asam coal mines in South Sumatra where work only began in 1919 are producing coal

with an equally low ash-percentage, whilst the Poeloe Laoet mines in South East Borneo now have an annual output of some 200,000 tons of excellent coal with an ash-percentage of 7·5. These are all State collieries and are being energetically developed by the Government of the Netherlands East Indies. The extent to which their coal is making headway in Singapore is shown by the fact that the imports from Dutch Borneo and Sumatra which were only 28,000 tons in 1922 had increased to 128,000 tons in the following year and were 64,000 tons for the first half of 1924.

Japanese coal, as is shown in Appendix VI, held a commanding position in the Singapore market until 1924, when it yielded the supremacy to South African coal. It must still be regarded as a serious rival to Indian coal: for the recent fall in the Japanese exchange places it in a very favourable position in the Singapore market and freights from Japan to Singapore for the reasons given in Chapter VII are lower than those from India, the actual figures when we were in Singapore being 4 yen or Rs. 4·43 per ton for Japanese coal at the current rate of exchange (which was 140 yen = 100 dollars = 155 rupees) as against Rs. 6-8-0 for Indian coal.

Imports from South Africa almost equalled those from Japan in 1923 and greatly surpassed them in the first half of 1924. South African coal now holds a leading position in the Singapore market, where it enjoys a high reputation for excellent quality, good weight and careful loading. Freight from South Africa is plentiful and comparatively cheap, being quoted, when we were in Singapore, at 11*s.* 6*d.* the ton, which with the rupee at 1*s.* 6*d.* is equivalent to Rs. 7-10-8 as against Rs. 6-8-0 for freights from India. The reason for this is that Singapore is favourably placed for tonnage working up from western ports to load a return cargo in eastern waters, and that owners are willing to accept very low rates for cargoes from South Africa rather than send their ships up in ballast.

Australia exports a not inconsiderable quantity of coal to Singapore, having much the same advantages as South Africa in the matter of freight. Other less important sources of supply are the United Kingdom, China, French Indo-China, British North Borneo and the local Malayan collieries.

Sabang.

12. Prior to the imposition of the embargo, ports in Sumatra provided a small but by no means negligible outlet for Indian coal. During the five years ending with 1910 the exports of Indian coal to Sumatra averaged 87,000 tons and for the five years ending with 1915, 96,000 tons. Even in 1916, they were 104,121 tons, but they fell to 8,474 tons in the following year and completely disappeared in 1918. They recovered to 41,756 tons in 1919 and to 69,473 tons in 1920, after which the embargo led again to their complete disappearance. We were unable to visit Sabang which is by far the most important coaling station in Sumatra, but the evidence received at Singapore showed that it is now a serious rival to

Singapore as a bunkering port. We could not obtain exact information regarding the amount of coal annually imported but there seems to be no doubt that it is increasing. Sabang offers many attractions to shipping. It is conveniently situated in a sheltered position on the small island of Weh off the north coast of Sumatra; it has a very complete and up-to-date mechanical equipment for loading and unloading coal and is thus able to bunker steamers very speedily; and the absence of harbour and light dues and of pilotage charges, all of which are comprised in the inclusive prices charged for coal, makes it very cheap as a bunkering port. It will not be an easy matter for Indian coal to recover a footing in Sabang, which for the reasons discussed in the case of Singapore enjoys the advantage of many other competing sources of supply. In the nature of things the competition of the Netherlands East Indies collieries must be even more severe there than it is at Singapore. But the hand-book issued by the Sabang Bay Harbour and Coal Company, Limited, which works the port, mentions Bengal (Dishergarh) coal as one of the descriptions of coal usually kept in stock and even if the prejudice against Indian coal which is felt in Singapore is also existent in Sabang, it should not be impossible for Indian coal to regain a footing in Sabang, provided quality and prices can be made sufficiently attractive.

Colombo.

13. Colombo before the war provided the most important outlet for Bengal coal outside India. We attach, as Appendix VII, a statement kindly furnished to us by the Principal Collector of Customs, Colombo, showing the imports of coal from 1910 onwards, and extract below its salient features:

Year.	Total imports of coal.	Total imports of coal from India.	Imports from India on Government account.	Total imports from British South Africa.	Total imports from British South Africa on Government account.
	Tons.	Tons.	Tons.	Tons.	Tons.
1910 . .	879,468	526,672	78,089	5,502	..
1911 . .	738,664	469,465	73,617	2,853	..
1912 . .	957,804	627,771	72,143	12,409	..
1913 . .	839,941	416,113	52,093	87,536	43,319
1914 . .	706,435	341,943	72,638	84,013	34,840
1915 . .	729,053	539,459	87,197	92,973	..
1916 . .	696,044	566,804	120,367	47,984	..
1917 . .	396,547	312,112	84,551	40,608	..
1918 . .	273,955	126,649	55,605	133,414	..

Year.	Total imports of coal.	Total imports of coal from India.	Imports from India on Government account.	Total imports from British South Africa.	Total imports from British South Africa on Government account.
	Tons.	Tons.	Tons.	Tons.	Tons.
1919 . .	736,122	538,741	50,045	109,147	..
1920 . .	809,141	744,690	103,948	35,462	..
1921 . .	715,375	275,893	74,414	247,595	..
1922 . .	581,716	72,858	58,616	231,000	..
1923 . .	544,548	124,414	91,658	205,240	15,002
1924 . .	675,136	167,890	97,833	310,762	16,171

This statement shows that the commanding position held by Indian coal in the Colombo market before the war, when coal from the United Kingdom was its only serious competitor, was not materially affected either during the war or immediately after it. The imports of Indian coal into Ceylon in 1920 were in fact larger than they had ever been. The embargo put an end to this favourable state of affairs, although it did not, as in Singapore, extinguish Indian imports completely. South African coal now bids fair to occupy in the Colombo market the position formerly occupied by Indian coal, with coal from the United Kingdom as a good second. It might be thought from an examination of the imports during the past two years that Indian coal made a partial recovery after the removal of the embargo, but its position is in reality much more precarious than at first sight it would seem. As we learned during our visit, there were now only three consumers in Colombo who use Indian coal to any great extent, the Colombo Gas and Water Company, Messrs. Mackinnon, Mackenzie & Co., who use it for bunkering the steamships of the British India line and the Ceylon Government Railways who are by far the most important of the three, taking as they do about 100,000 tons per year: but there is a grave danger that the Ceylon Government Railways, in view of the better results obtained from Natal coal, may cease to use Indian coal on the expiry of the existing contract at the end of March 1925. We should here mention that we brought this danger to the notice of the Indian Mining Association and the Indian Mining Federation immediately on the return of the sub-committee from Colombo with a suggestion that suitable action should be taken.

Opinion in Colombo was as emphatic in regard to the demerits of Indian coal imported since the war as it was in Singapore, with one important exception, to which we would invite special atten-

tion. No witness who appeared before us had greater practical experience of the comparative merits of Indian and other coals than Mr. A. C. Campbell, Deputy Superintendent of the B. I. S. N. Co. at Colombo, who supervises all bunkering for the P. & O. and B. I. Companies at that port. Mr. Campbell stated that his experience of Indian coal was entirely favourable and that the coal received from Calcutta by Messrs. Mackinnon, Mackenzie & Co. at Colombo was as good as South African. Subsequent enquiries in Calcutta showed that the coal exported by Messrs. Mackinnon, Mackenzie & Co. to Colombo is all first class coal: it comes from their own collieries or, if purchased, is inspected by the Chief Mining Engineer's staff, but no special care is taken to avoid breakage when loading. This evidence establishes two very important facts: first, it is possible by utilising the services of the Chief Mining Engineer's staff to secure that only coal of high quality and in good condition is delivered at the docks, and, secondly, coal of high quality despatched in good condition does not suffer from hand-loading into steamers to the extent commonly supposed. Mr. Campbell's evidence thus in reality confirmed the evidence of other witnesses in Colombo that only Indian coal of the best quality could compete in that market. We should perhaps mention the suggestion that the re-entry of Indian coal is handicapped by a feeling in Colombo that Ceylon should have been treated with more consideration in the matter of coal supplies when the embargo was imposed. We found no reason to believe that any such sentimental considerations influence any of the firms interested in the coal trade; their representatives who were good enough to give evidence before us were unanimous in the view that purchases were governed by the merits of factors. At the time when we visited Colombo the freight from India was Rs. 6-8-0 and that from Durban 13 shillings*, *i.e.*, Rs. 8·66 with the rupee at 1*s.* 6*d.* Freights from Cardiff stood at about the same figure, but less tonnage is apparently available at such rates from the United Kingdom than from South Africa.

Aden.

14. We attach as Appendix VIII a statement showing the imports of coal into Aden from 1912-13 onwards. The imports of Indian coal into that port have never been of great importance. For the ten years ending with 1915 they averaged only 11,000 tons. In the abnormal conditions following the war, they reached the figure of 36,854 tons in 1920-21, but since that year they have completely ceased. Appendix VIII shows the extent to which South African coal has obtained a footing in Aden. The recovery to some extent of a market there for Indian coal must obviously be dependent on the same two factors as elsewhere, namely, high quality and suitable price. Information obtained from Aden shows that Indian coal is regarded as from 25 to 30 per cent. inferior to ordinary Welsh coal, whilst Natal coal is considered to be only 20 per cent. inferior to Welsh.

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* *Vide* the remarks on South African freights in paragraph 98.

Port Sudan.

15. The only other port outside India that it is necessary to consider is Port Sudan. The information received from Port Sudan shows that the imports of coal into that port for the last five years were as follows:

	From Great Britain.	From South Africa.	TOTAL.
	Tons.	Tons.	Tons.
1920 . .	...	104,489	104,489
1921 . .	7,500	113,115	120,615
1922 . .	17,150	66,679	83,829
1923 . .	1,400	161,748	163,148
1924 . .	1,700	174,514	176,214

Of the coal imported about 80,000 tons of coal per annum is for the Government railways and the remainder is used for bunkering. At present no coal is being imported from India and we can only say, as we have said of Aden, that there is no reason why an entry into the Port Sudan market should not be effected provided quality and price can be made sufficiently attractive. Port Sudan is growing rapidly in importance not only for coaling purposes but for general trade, and its possibilities should not be neglected by the Bengal coal trade.

General position in Indian ports.

16. We now pass on to consider the position of Indian coal in the principal home ports, Rangoon, Madras, Bombay and Karachi. We have been unable to obtain figures showing the countries of origin of imported coal for each of these ports except for Bombay for the last four calendar years. Such figures are available only for provinces as a whole, but the import of foreign coal into the minor ports is negligible except in Madras where appreciable quantities came into Cuddalore and Tuticorin in 1922-23 and 1923-24. For all practical purposes therefore the provincial figures reproduced in Appendices IX—XII may be taken as representing the imports into the four ports under consideration. It will be noted that in these ports the extrusion of Indian coal by foreign imports cannot be attributed to the embargo placed on the export of Indian coal. The quality of the coal supplied has been the most important factor with the purchasers: but other factors also contributed to encourage foreign imports. There was a rise in pit-head prices in Bengal, accompanied by difficulties of transport. There was a very pronounced reduction in the price of coal in the United Kingdom after the settlement of the coal strike of 1921: and the slump in trade set free cargo-space all over the world and gave the advantage of low freight-rates to competing countries.

Rangoon.

17. Imports of foreign coal into Burma reached their maximum of 208,731 tons in 1921-22, as will be seen from Appendix IX. For the reasons already given, Welsh coal of good quality could be delivered in Rangoon at prices comparing favourably with those of Bengal coal and the

difficulties under which the coal trade was labouring in India stimulated imports from South Africa also, which reached their maximum in 1921-22. In the following year the imports of foreign coal into Burma fell to 85,819 tons and in 1923-24 to 57,469 against 503,204 tons from India, the highest figure reached since 1910, while in the first nine months of 1924-25 imports from India amounted to 251,090 tons against as little as 7,684 from other countries. Thus Indian coal may be said to have regained its old supremacy in Rangoon. Bengal has an advantage over other competing countries in its close proximity to Burma which enables consumers to be sure of getting steady supplies of Indian coal whereas those from South Africa and the United Kingdom are spasmodic. But the large imports of late years from the United Kingdom, Natal, the Transvaal, Australia and Japan have given the Rangoon market a knowledge of the merits of foreign coals, and the Indian exporter cannot look upon Rangoon as his preserve. Attention must be paid to quality, condition and price in this just as much as in other markets overseas. Although two important consumers in Rangoon, the Burma Railways and the Irawaddy Flotilla Co., expressed themselves as fairly well satisfied on the whole, it was clear from their evidence, and even more clear from remarks by other witnesses, that the quality of the Indian coal sent from Calcutta might be considerably improved. As to condition, there was unfavourable criticism of the amount of dust and small coal in the coal as received in Rangoon. And as to price, it must be remembered that, in Rangoon, Indian coal has to compete not only with other coals but with the wood and paddy-husk which have been substituted for it since the cost of coal rose in Burma and therefore, as was not noticeably the case in the other places visited, a reduction in price means an assured increase in demand. Another point to be considered is that any reduction of prices must have a favourable effect on bunkering which as shown in Appendix XIII ranged in the past four years from 99,000 to 169,000 tons.

Madras.

18. The position of Indian coal in Madras is almost identical with that in Rangoon. As Appendix X shows, the imports of foreign coal were almost negligible until 1921-22 when, as a consequence of the transport difficulties in India and of the high level of freights ruling between Calcutta and Madras, they reached their maximum of 86,197 tons. In Madras, Indian coal has never lost its predominant position, but the imports of other coals more especially from South Africa continue to be considerable and here even more than in Rangoon consumers are dissatisfied with the quality of the Bengal coal supplied to them. We invite attention to the statement of the Madras Chamber of Commerce that, whilst good Bengal coal compares favourably with Natal coal, the latter, even at equal prices, would probably be given the preference because it usually contains a smaller percentage of fine slack than Bengal coal as delivered in Madras. It must not be overlooked also that the bulk of the imports of Indian coal into Madras are for the use of the railways and that the authorities of

the Madras and Southern Mahratta Railway were particularly emphatic in their condemnation of the quality of most of the Indian coal supplied to them.

Bombay.

19. Before the war, as will be seen from Appendix XI, Bombay took more coal from Bengal than any other overseas market. The average imported there during the four pre-war years was 772,286 tons. But even then an average of 338,126 tons of foreign coal was coming into Bombay, and it is obvious that serious competition from other coals must be accepted as normal in the Bombay market. The first year of war made little difference in the imports of either home or foreign coal but thereafter Indian coal practically ceased to come into Bombay by sea and instead was brought in by rail across India. Imports of foreign coal declined, reaching their lowest level of 11,249 tons in 1917-18 and being no higher than 43,095 in 1920-21, when imports of Indian coal had recovered to over 400,000 tons. But there was a complete reversal, and worse, in the following year when the imports of foreign coal reached the enormous total of 1,116,198 tons or nearly twice their highest previous record. The circumstances to which this was mainly due have been explained at length in paragraph 16 above. The high freight rates from Calcutta to Bombay were a contributing factor, and orders placed by the Railway Board under an apprehension that stocks would be short in this country were largely the reason why imports of coal from the United Kingdom were so heavy in 1921-22 and the following year. There was then a recovery. Imports from Bengal were only 89,289 tons in 1922-23 against 620,925 tons from abroad; they increased to 126,065 tons in 1923-24 as against 375,092 tons; and for the first nine months of 1924-25 with 174,355 tons they almost equalled the foreign imports of 182,784 tons. But in spite of the recent improvement Indian coal has not yet recovered a dominant position in what should be its natural market. The reason why it has not done so is undoubtedly the quality of the Indian coal supplied in the period immediately following the war. Consumers in Bombay were even more emphatic than those elsewhere in condemning the Indian coal which they received. It is not surprising that consumers who describe their experience of Indian coal as "bitter" should prefer South African which has moreover been obtainable at lower prices.

Bombay differs from the other ports which we visited, in that the bulk of the coal imported is used not for the bunkering trade, in which incidentally a very marked decline is apparent during the last few years, but for local consumption. The task before the Indian coal-trade is not merely to oust foreign coals from a definite market but also to preserve a market for coal against the competition of oil and electricity. In recent years, according to the information furnished to us by the Millowners' Association, coal has been superseded by electricity in at least 50 per cent. of the cotton mills and other large industrial concerns in Bombay and by oil fuel in 25 per cent. of the remainder. In addition, the G. I. P. Railway, one of the largest consumers of Indian coal in Bombay,

has already electrified a section of its suburban line and is rapidly proceeding with the electrification of further sections. This tendency to use oil and electricity in preference to coal can be arrested and the bunkering trade can to some extent be revived, only if, as shown by the evidence, there is exported to Bombay good Indian coal covered by a satisfactory guarantee of quality. No better evidence of the dissatisfaction of consumers with the quality of their Indian coal could be furnished than the adoption by three important consumers in Bombay, the Port Trust, the Improvement Trust and the Municipality, of the system of purchasing coal on calories about which we shall have more to say in Chapter IX. It should further be mentioned that in consequence of the large proportion of the total imports that goes into local consumption in Bombay middlemen occupy a very much more important position in the coal trade there than they do elsewhere. Possibly direct purchase from collieries would have caused less dissatisfaction to consumers as regards quality but any handicap in this respect applies equally to all coal.

Karachi.

20. Appendix XII attached to our Report shows that in Karachi, as in Bombay, the competition of other coals was increasing in the years prior to that war and that, in 1913-14, the imports of foreign coal, almost all of which came from South Africa and the United Kingdom, were almost exactly half those of Indian coal. During the war the imports both of Indian coal by sea and of foreign coal completely disappeared until 1920-21, when all but 257 tons out of a total of 64,874 tons were supplied by Bengal. In the following year, for the reason that we have already given for Bombay, the imports of foreign coal increased to 63,947 tons against 84,684 tons of Indian coal and in 1922-23 the figures were 91,255 tons against 35,860 tons. There was a distinct improvement in 1923-24 when 68,489 tons of Indian coal were imported against 89,188 from other sources, and in the first nine months of 1924-25, the imports of Indian coal have been even better, having reached 61,379 against 75,127 tons.

Since oil has been substituted for coal on the section of the North Western Railway terminating at Karachi, the imports of coal into Karachi have been almost entirely for bunkering purposes. The firms engaged in this trade were as unanimously emphatic in their condemnation of the quality of Indian coal supplied to them as were the witnesses examined in Bombay.

Competition of oil with coal.

21. Such information as we have been able to gather in regard to the competition of oil fuel with coal for bunkers has been embodied in Appendix XIV. It is not easy to draw any very definite conclusion from this statement which shows that, whilst the number of vessels using oil entering and leaving Singapore, Colombo and Madras has increased steadily there has been a very marked falling off in oil bunkering at Calcutta since 1920-21.

Surplus of first class coal for export.

22. We have already said sufficient to show that it is only by the export of coal of the best quality available that the lost markets can be recovered. The question therefore arises whether India has a surplus of first class coal suitable for export and whether, having regard to industrial requirements, it is desirable that the export of such coal should be encouraged. No trustworthy information is yet available as to the extent of the resources of high-grade coal in this country but in any case we do not consider the question to come within our purview. Our Committee has been appointed at the instance of the coal-trade to investigate an immediately pressing problem and our terms of reference presuppose a surplus. There is every reason to believe that this surplus will increase during the next few years. The output of the railway collieries which is estimated at 1,930,000 tons in 1925 will, in the opinion of the Chief Mining Engineer, increase to 3,210,000 tons in 1930 and to over 4,000,000 tons in 1933 and this will mean that an addition of at least 660,000 tons per year will be made to the available supplies of first class coal. It may be well in this connection to emphasise the fact that whilst the export trade in Indian coal to foreign countries is of very material value to India, especially in the present depressed conditions of the coal industry, the amount exported forms but a small percentage of the total raisings. Even in 1920, when exports to foreign ports were at their highest and raisings at their lowest, only 7 per cent. of the total tonnage of coal raised in India was exported and in 1924 little more than 1 per cent. Frequent references were made by witnesses to the three million tons of coal which passed through the port of Calcutta before the war, but, it must be remembered, the greater part of this represented exports to Indian ports and the bulk of the coal exported is thus for home consumption. Even if exports to other countries were again to reach the highest level so far recorded and were to average about a million tons annually, this would not constitute a serious drain on India's coal resources.

Scheme of the report.

23. The problem before us can be stated in the two words, "quality" and "price." Indian coal can hold its own in overseas markets only if its price and quality are such as to commend it to consumers. At present prices and with present quality, competition is becoming everywhere more difficult and the task before us is to suggest how this can be remedied. Mr. Banerjee dissents from this view and considers, for the reasons separately recorded by him, that the question of quality is much less important than that of price. In Chapter II, we endeavour to show the exact extent of the competition between Indian and other coals in the matter of both quality and price. In the next five chapters, we discuss the possibility of securing a reduction in the price of coal by economies in the coalfields, by improvements in railway transport, by a reduction in railway freights and terminals, by other modifications in railway working, by improved methods of handling at the docks and by a reduction

of port charges. In Chapter VIII we deal with steamer freights. In Chapter IX, we discuss the problem of maintaining a standard of quality and propose as a solution the establishment of a Grading Board. In Chapter X we consider the suggestion that coal might be pooled for export. In Chapter XI we make recommendations on various points not covered by the previous chapters. Chapter XII is a summary of our recommendations and conclusions.

CHAPTER II.

Comparative merits and prices of Indian and other coals.

Comparative merits and prices of Indian and other coals.

24. We have emphasised in the preceding chapter that on the evidence received at all the ports we visited the problems before us can be summed up in the two words "quality" and "price." We propose in this chapter to summarise briefly such information as we have been able to obtain regarding the quality and the price of Indian coal as compared with those of the coals with which it is in competition, as only in this way can we gauge the exact extent of the competition which it has to meet and judge the nature of the assistance which it should be given.

We should make it clear at the outset that, from the point of view of our enquiries, the only coalfields in India of importance are those which are usually designated as the "Bengal Coalfields" though by far the larger portion of their total output is now contributed by the mines in Bihar and Orissa. The other coalfields in India are small both in size and in output and none of the coal raised from them is exported. We would, however, take this opportunity of emphasising that any measures which are taken to stimulate the export of Indian coal cannot but have a favourable reaction on those mines, whether situated in the Bengal coalfields or elsewhere, which are not directly interested in the export trade.

Importance of the Raniganj and Jharia coalfields.

25. The table in Appendix I to our Report which shows the production of coal in each Province and State of India brings out clearly the predominant position of the Bengal coalfields in the coal industry of India. The salient features of that table are reproduced below.

Year.	Total production.	Bihar and Orissa.	Bengal.	Total Bengal coalfields.	Percentage to total production in India.
1901-05 (average) .	7,627,000	*Not shown*	*separately*	6,481,000	84·9
1906-10 (average) .	11,523,000	6,796,000	3,526,000	10,322,000	89·5
1911-15 (average) .	15,440,000	9,669,000	4,443,000	14,112,000	91·3
1916-20 (average) .	19,356,000	12,695,000	4,982,000	17,677,000	91·3
1921 . . .	19,302,947	12,990,481	4,259,642	17,250,123	89·3
1922 . . .	19,010,986	12,711,328	4,328,986	17,040,314	89·6
1923 . . .	19,657,778	13,212,250	4,621,578	17,833,528	90·6

The whole of the coal raised in the province of Bengal comes from the Raniganj coalfield which lies in the Burdwan district and is some 130 miles west of Calcutta. The first working of this field dates from 1820, 73 years earlier than the first working in the Jharia field which lies some 40 miles further west in the adjoining districts of Manbhum and Hazaribagh and is now in Bihar and Orissa. The difference in the date of the opening of the two fields is reflected to this day in the conditions in them. In the Raniganj field, though it is much the less congested of the two, the greater age of the mines means deeper working and renders labour more expensive and more difficult to obtain. The Jharia coalfield, which is by far the most important in India, accounts for some three-quarters of the output of coal from Bihar and Orissa, the remainder being mainly contributed by the Bokaro and Ramgarh fields to the west of it, the Giridih field to the north of it, all three of which are in the Hazaribagh district, and by that part of the Raniganj field which falls within the Bihar and Orissa districts of Manbhum and the Sonthal Parganas. The collieries in the Giridih field are almost all railway collieries and the output from them is thus almost entirely consumed by the railways. This is also the position in the Bokaro and Ramgarh fields where not more than one per cent. of the total output is despatched by collieries which do not belong to the railways, and in the Karanpura field where working has only recently begun and where, in addition to the railway collieries, only one public company is at present operating. The area so far proved in the new Talchar field in Orissa is very small and unimportant. For purposes of railway working, Giridih is included in the Asansol division and thus in the Raniganj coalfield. The Raniganj and Jharia fields, which between them produce three-quarters of all the coal mined in India and practically all that is exported, are therefore the only ones we need consider. We attach a map which will make the position of the coalfields in Bengal and Bihar and Orissa clear in relation both to each other and to Calcutta.

Brief description of the Bengal coalfields.

26. The coalfields of Bengal and Bihar and Orissa are found in deposits much younger than those of Europe and, generally speaking, it may be said that they belong to the Gondwana (Permo-Triassic) age. They invariably follow the river valleys and to a great extent are basinshaped. The coal in both fields is laminated and the dull and bright layers are very distinct. The Raniganj field has a known area of about 500 square miles but its extent eastwards has never been ascertained although a certain number of borings have been sunk through the alluvium under which the coal-measures pass in that direction. Coal occurs in the lowest (Barakar) and in the uppermost (Raniganj) stage of the Damodar series. The best seams are known as the Dishergarh-Poniati and Sanctoria and there are five or six other seams the quality of which is not quite so good. The remainder of the seams produce only second class coal. The Jharia field

is a shallow and approximately elliptical basin, the axes of which are 23 and 10 miles respectively in length. The coal-bearing area covers about 150 square miles and consists chiefly of beds belonging to the Barakar stage in which there are 18 coal seams. The seams of the Raniganj stage in this field are on the whole thinner and poorer. Of the Barakar seams, the nine lowest are, as a rule, of poor quality and work is confined chiefly to Nos. 10 to 18 of which Nos. 13, 14, 14A, 15 and 17 are generally the best. Although the Giridih field is a small one covering only 11 square miles, most of the coal which it produces is of excellent quality.

As regards uniformity of quality, the Raniganj field is much more fortunately situated than the Jharia field. The coal in its best seams remains fairly uniform throughout, whereas in the Jharia field the majority of the seams vary in quality and in thickness to an extraordinary extent. Seams which may safely be classed as first class in one part of the Jharia field can in another part be put only in the second class, but what is even more important is the large variation in the quality of the different sections of a seam in the same mine. As a typical instance of this, we may quote the case of a seam which is about 22 feet in thickness. About 7 feet 6 inches of coal at the bottom of this seam has an ash content of over 20 per cent. while the rest of it has an ash content of only 14 per cent.: but the whole of the seam is worked. Matters are still further complicated by the occurrence of eight distinct bands of "coarse-grained" coal the thickness of which, though constantly varying, is in places as much as four feet, with an ash content of approximately 26 per cent. It is undoubtedly this lack of uniformity which has given rise to the complaints about the quality of the coal supplied even by collieries working first class seams: and, as we shall show in Chapter IX, this renders the sale on analysis of coals from the Jharia field specially difficult.

One further point of comparison between the Jharia and the Raniganj coal should here be mentioned. As will be seen from the figures of analyses given below there is a very marked difference in the volatile constituents of the coals produced by the two fields. The percentage of volatile matter in the Raniganj coal is very high, in some cases as high as 35 per cent., whilst that of Jharia coal rarely goes above 25 per cent. Jharia coal is practically all coking coal, whilst the Raniganj coal is either non-coking or only partially coking. It follows that the Jharia coal is better than the Raniganj for certain purposes and *vice versa*. The Jharia coal is a low volatile and short-flamed coal and therefore gives better results than Raniganj when used in an ordinary locomotive boiler or in any boiler with a forced draught. But for some purposes a mixture of Dishergarh-Poniati and Jharia coals will give results superior to those from either of them in isolation and comparable to those from Welsh. This fact is particularly important from the point of view of competition with Natal coals which, as will be shown, are very similar in quality to Jharia coals.

Analyses of Indian and other coals.

27. We give a statement below showing how the analyses of the best Bengal coals compare with those of the coals with which they are in competition. We would preface this by a few words of explanation. The most important factor in determining the value of a coal is its calorific or heat value. The calorific value of the coal is the amount of heat which is given out by completely burning a unit-weight of coal and is measured by the number of corresponding units of weight of water that are raised one degree in temperature by this amount of heat. When the centigrade unit of temperature is used, the unit quantity of heat is termed a calorie and when the Fahrenheit unit is used it is termed a British Thermal Unit (B. T. U.). To convert calories into British Thermal Units it is necessary to multiply by 1·8.

The evaporative power of a fuel represents the number of pounds of water at 212 degrees Fahrenheit that can be evaporated or converted into steam by one pound of the fuel. To ascertain the theoretical evaporative power of a fuel one divides by 965·7 the number of thermal units which it generates on combustion. If, for instance, the heat on combustion of a sample of coal were 12,300 British Thermal Units, then its evaporative power would be

$$\frac{12,300}{965·7} = 12·73 \text{ lbs.}$$

which means that under proper conditions one pound of the coal in question would evaporate 12·73 lbs. of water already heated to 212 degrees Fahrenheit.

But this duty is rarely realised, for apart from mechanical faults in the boiler, etc., there is the question of ash and moisture in the coal and a percentage allowance for these must be made.

The amount of ash which a coal contains is no less important than its calorific value. One of the complaints made against Indian coals has been that many of them contain a large percentage of ash and that sometimes the ash is of such a nature as to cause clinkering and throw unnecessary work on the firemen. Consumers naturally object to paying freight on large quantities of matter which is not combustible. A further desideratum of good coal is that it should contain a minimum of dust and slack, which either clog fires or when used in boilers with forced draught disappear unburnt up the chimney; in shipment-coal, moreover, if the proportion of slack and small coal is large there is a danger of spontaneous combustion.

	Ash.	Moisture.	Volatiles.	F.Carbon.	Calories.	B.T.Us.	Output per month.
Indian Coal.							
Disherghar Quality—							
Aldih Colliery	9·80	2·41	29·29	61·00	7,436	13,385	
Disherghar Colliery	8·82	2·64	31·30	59·88	7,392	13,306	
Poniati Quality—							
Pretoria Colliery	7·60	4·20	24·80	67·60	7,237	13,026	
Sripore „	7·80	3·13	29·00	63·20	7,523	13,541	
Selected Jharia—							
Bararee Colliery	10·72	1·72	22·00	67·28	7,565	13,617	
Bhutgoria-Kendwadih (17 Seam) . . .	9·40	1·27	23·80	66·80	7,666	13,799	
Average of 32 collieries working Dishergarh-Poniati .	9·74	3·92	30·77	59·49	7,236	13,025	475,000 tons which could be considerably increased.
Average of 18 collieries working Selected Jharia .	11·70	1·32	24·30	62·60	7,431	13,375	
Natal Coal.							
Natal Navigation	7·41	·90	21·78	69·91	7,513	13,524*	
Glencoe	7·63	1·11	20·27	70·99	7,782	14,007	
St. George's	7·70	·80	21·80	69·70	7,897	14,214	
Durban Navigation	11·25	1·60	27·10	60·05	7,192	12,945	
Average of Natal collieries	10·03	1·39	21·08	67·50	7,487	13,476	500,000 tons capacity of Collieries.

*Stated to be a minimum.

	Ash.	Moisture.	Volatiles.	F. Carbon.	Calories.	B. T. Us.	Output per month.
Transvaal Coal.							
Witbank	13·82	0·94	27·04	56·96	6,982	12,567	
Middleburg	12·62	0·94	24·46	60·63	7,008	12,615	
Coronation	15·74	0·87	23·15	58·79	6,741	12,133	
Average of Transvaal collieries	16·06	2·94	25·23	55·77	6,440	11,592	Capacity not known.
Japanese Coal.							
Tagawa Colliery	8·96	1·83	42·47	46·74	6,837	12,306	
Miiki	9·00	0·20	41·20	49·60	7,794	14,029	
Iwaya	8·61	1·36	38·03	52·00	6,601	11,882	
Average of 14 collieries	10·59	2·12	39·88	47·41	7,116	12,809	
Australian Coal.							
Average of two samples	8·28	1·94	29·42	60·36	7,710	13,878	
Sample landed in India by Messrs. Mackinnon, Mackenzie & Co.	11·00	2·46	58·55	30·45	7,278	13,100	

Natal and Transvaal analyses were obtained from Union of South Africa Report of Coal Commission dated 1921.
Japanese analyses were obtained from Messrs. Asana Bussan Company, Limited, Calcutta.
The *Australian* average analysis was obtained from Messrs. Gillanders Arbuthnot & Company.
The Indian analyses were obtained from samples of coal which were taken independently from the actual working face underground by officers of the State Railways' Coal Department and which were representative of the whole section of the seams being mined. The actual analyses were made at the Government Laboratory at Alipore. The samples were taken and the analyses were made for the guidance of the State Railways' Coal Department in purchasing coal for the Indian Railways.

This statement is instructive in the light of the judgment passed by so many witnesses, especially in Colombo, that Indian coal is at least 10 per cent. worse than Natal or that it is no better than Transvaal coal. It shows that the best Indian coals are at least as good as the average level of the best Natal coal and that they are distinctly better than the average of Transvaal or Japanese. We wish however to draw particular attention, in this connection, to the difference already noticed between Raniganj and Jharia coals, which makes the two kinds suited for different purposes. Several witnesses, realising this difference and realising that Dishergarh coal, as a fast burning or "fireman's coal," is of a type in no way comparable with the Natal coals which have successfully invaded overseas markets, seek to draw the conclusion that only Jharia coals, as strictly comparable with those from Natal, should be sent out to compete against them. This conclusion we are unable to accept: it is not a question of matching against Natal coals either Dishergarh coals or Jharia coals separately: a judicious mixture will produce a coal that for some purposes will prove more satisfactory and more economical than either Dishergarh or Jharia coal burnt alone and can compete, on at least level terms, with any coal or mixture of coals from any collieries in South Africa. We give below the analysis of a mixture of one-third Dishergarh-Poniati and two-thirds selected Jharia which has proved very successful both for the bunkering of steamers and for use in locomotives: it is not claimed that this or any other mixture of Indian coals is better than the very best of the Natal coals for these purposes but we are definitely advised that it is at least fully as good.

	Ash.	Moisture.	Volatiles.	Fixed carbon.	Calories.	B.T.Us.
Mixture of one-third Dishergarh-Poniati and two-thirds selected Jharia.	9·30	2·20	2·37	63·00	7,400	13,320

As regards calorific value, the best of the Natal coals are slightly superior to this mixture, but there are other factors besides calories to be considered when assessing the merits of a coal. The addition of a proportion of free-burning coal in the mixture brightens up the slower burning coal and thus more than compensates for the reduction which it causes in the number of calories: in particular it facilitates the starting and restarting of locomotives and considerably lightens the heavy work in the stokeholds of steamers. We must not omit to mention that the ash resulting from this mixture is soft and non-clinkering. To specify a mixture suitable for fixed boilers in the Bombay mills is dangerous since so much depends on the particular type of boiler, on the system of draught and on the kind of work for which it is used. But, generally speaking, a mixture very suitable for use in mills would be three-fifths Selected Jharia and two-fifths Dishergarh-Poniati.

It may be mentioned that much of the distrust of Indian coals in overseas ports appears to be due to the description of a coal that

is not the very best Jharia coal as "first class Jharia." Coal so designated is not so good as Selected Jharia, mainly owing to its higher ash content. None the less it deserves particular mention among coals suitable for export because it has been used with very satisfactory results in admixture with selected Jharia coal for ordinary bunkering purposes by the British Indian Steam Navigation Co. The analyses of coal of this class from two representative collieries are as follows:—

First class Jharia.	Ash.	Moisture.	Volatiles.	Fixed carbon.	Calories.	B.T.Us.
15 Seam Jogta . . .	11·9	·95	18·70	69·4	7,561	13,610
South Bullihari . .	13·5	1·00	21·43	65·07	7,258	13,064

These analyses are from samples taken in the same manner as those quoted above for other Indian coals. The importance of enabling purchasers to obtain precise information as to any first class Jharia coals exported can hardly be exaggerated owing to the large variation in the quality of these coals in different parts of the field. The best of them compare not unfavourably with the average Natal coal and most of them are better than Transvaal.

Our conclusion as regards quality is that the best Indian coals can compete in any market in the East: but if such competition is to be effective, only the best coals should be exported and particular care must be taken not to allow the purchaser overseas to be misled as to the precise quality of coal which will be delivered. It is chiefly lack of attention to these two vital points which has earned for Indian coal a bad name overseas.

The Sukkur Barrage contract.

28. We must at this stage refer to the widespread impression that Indian coal was, as it were, officially admitted to be inferior to South African when the Superintending Engineer in charge of the Sukkur Barrage project accepted a tender for Transvaal coal. The reasoning on which this impression is based is in essence as follows. The best Indian coals were offered in open competition, on level terms, and were adjudged worse value for money than Witbank coal: any one of these coals could have been delivered at Sukkur direct by rail at a price several rupees cheaper than South African coal imported *viâ* Karachi: therefore the acceptance of one of the South African coals tendered is equivalent to a declaration of the inferiority of all Indian coals. We need hardly say that this impression is entirely incorrect. The point to which the Engineer in charge of the Sukkur Barrage attached most weight was not the quality of the coal tendered but certainty of delivery. He required the coal for grab line excavators at various places at the south of the canal area, within easy reach of Karachi, not at Sukkur itself or in its neighbourhood. He had no facilities for handling or stowing large quantities of coal and therefore wished to take delivery of small parcels of coal as he required it for consumption. And the plant for which the coal was needed was so expensive that he could not afford to risk having it lie idle owing to irregular

delivery of coal. He did not wish to obtain his coal by rail across India because this would have involved uncertainty as to delivery, difficulties as regards handling and probability of shortage: it suited him better to arrange to obtain it delivered on rail, weight guaranteed and in such quantities as he wanted from time to time at Karachi where he had his head quarters and where he could deal expeditiously with any disputes that might happen to arise. Only a Karachi firm could successfully meet these conditions and it so happened that no Karachi firm had resumed business in Indian coal after the interruptions caused by the war and by the coal control. They were all dealing in coal from South Africa and the United Kingdom. To compete successfully for this contract Indian coal exporters would first have had to extemporise new agencies in Karachi. It was for this reason that the Chief Mining Engineer suggested their being allowed the alternative of tendering f.o.r. colliery; but it will be seen from the evidence that this alternative was ruled out of consideration when the time came to accept one of the tenders. Only two tenders of Indian coal were considered seriously: the first was from a tenderer who was not represented in Karachi and who could not therefore really hope to meet the conditions as to delivery piecemeal at Karachi: the other was through a Karachi firm, but the reservation of the right to substitute other coals made it impossible to accept this. It follows that the decision to give the contract to Witbank coal cannot be regarded as in any way an indication that the officer concerned held a low opinion of Indian coals as such: at worst it could be held to show that he did not approve of the coal from the few mines covered by the two tenders which we have mentioned and even that would misrepresent his attitude.

Comparative prices of Indian and other coals.

29. We propose in the following paragraphs to endeavour to ascertain the f.o.r. price at which Indian coal of the best quality must be placed on rail in order to enable it to compete with other coals in each of the ports that we visited. We would preface our examination by pointing out that it is not an easy matter to obtain exact information regarding prices, as these fluctuate greatly from month to month and as the firms engaged in the coal trade are naturally somewhat reluctant to disclose the details of their transactions. We have however been able to obtain enough information to enable us to arrive at conclusions which are sufficiently definite for our purpose.

In order to arrive at the f.o.r. price, the deductions which have to be made per ton from the price at which Indian coal can compete in the various ports are the following:—

	Rs.	A.	P.
Railway freight (net) . . .	3	8	6
Calcutta Port charges . . .	1	0	0
Steamer freight . (varies for each port)			
Wastage at 2 per cent. . . .	0	3	0
Insurance	0	3	0
Finance	0	4	0

The Indian Mining Federation would add agency charges at destination, but we consider that these should be omitted from a general consideration of c.i.f. prices: in any case, they are very small amounting usually to 4 annas a ton. Of the deductions mentioned above, the only two which are constant are the railway freight which, in our calculations, we shall take at the Jharia rate of Rs. 3-8-6 per ton and the Calcutta port charges which are made up of a shipping charge of 8 annas and a river due of 8 annas per ton, a total of Re. 1 per ton. These two together amount to Rs. 4-8-6. As regards steamer freight, we must refer for details to the second paragraph of Chapter VIII where we give the present rates and those which would probably be quoted for a twelve-months contract. We have adopted the mean of the latter for each port, as follows:—

	Rs.	A.	P.
Calcutta to Rangoon . . .	6	0	0
Calcutta to Singapore . . .	7	8	0
Calcutta to Colombo . . .	7	8	0
Calcutta to Madras	6	12	0
Calcutta to Bombay . . .	8	4	0
Calcutta to Karachi	8	4	0

The figure for wastage supplied by the Indian Mining Association is 2 per cent. and the allowance to be made for this would therefore be in the neighbourhood of three annas, if we take it on raising cost, handling charges and railway freight. For insurance the figure given by the Indian Mining Association is only 0-2-9 per ton, but this is admittedly a low average figure and 3 annas may therefore be taken as suggested by the Indian Mining Federation. The Federation place the cost of finance at 4 annas, but the Indian Mining Association consider it to be too variable to justify them in giving a figure for it. We have taken 10 annas as a suitable deduction for wastage, insurance and finance. The deductions to be made for the various ports thus work out as follows:—

Rangoon .	Rs. 11-2-6 or rounded to the nearest anna			Rs. 11-3
Singapore .	,, 12-10-6	,,	,,	,, 12-11
Colombo .	,, 12-10-6	,,	,,	,, 12-11
Madras .	,, 11-14-6	,,	,,	,, 11-15
Bombay .	,, 13-6-6	,,	,,	,, 13-7
Karachi .	,, 13-6-6	,,	,,	,, 13-7

Rangoon and Madras.

30. In Rangoon and Madras imports of South African coals are comparatively small and the prices of these coals cannot be considered to govern the market. In the former port Natal coal was quoted at Rs. 18-8-0 c.i.f. per ton and the quotation for Transvaal varied from Rs. 16-8-0 to Rs. 17-4-0. At Madras the price of Natal coal was Rs. 21 c.i.f. and of Transvaal Rs. 24-12-0 ex stack. These prices are for occasional cargoes.

31. We were given an extensive range of c.i.f. prices in Singapore. For Natal coal, the c.i.f. price ruling when we visited that port was Rs. 18-0-0 to Rs. 18-10-0. For Transvaal coal it was Rs. 17 to Rs. 17-10-0, for Japanese Rs. 16-10-0 to Rs. 18-10-0, for best Sumatra Rs. 20, for Borneo and Dutch East Indies coal, suitable only for coasting steamers, Rs. 14-8-0 to Rs. 16-10-0. In view of the analyses which we have given, Indian coals of the best quality ought to be able to fetch the same price as Natal coals and the f.o.r. price should, therefore, be Rs. 5-15-0 on coal sent to Singapore. But it must be recognised at once that there is no hope of any Indian coals fetching at the outset the same price as Natal coal or even as Transvaal coal, owing to their being handicapped by the distrust felt regarding their quality. We were informed that in order to regain a footing in the Singapore market the first few cargoes would have to be sold at a maximum price of Rs. 14-11-0 to Rs. 15-3-0 which would leave an f.o.r. price of about Rs. 2 to Rs. 2-8-0.

Singapore.

32. The only price we were able to obtain at Colombo was that of Rs. 20 c.i.f. for Natal coal which would mean an f.o.r. price of Rs. 6-5-0 for Indian coal, if there were no prejudice against it and if it were in a position to compete on equal terms with Natal coal. Opinions as to the margin between the prices of Indian and South African coals which would be necessary to enable the former to regain something like its old footing in the Colombo market varied greatly but only one witness placed it at less than 10 per cent. If, therefore, we take Rs. 18 as the price at which Indian coal can compete for the present in the Colombo market this leaves a pit-head price of Rs. 5-5-0 per ton.

Colombo.

33. The c.i.f. prices of coal other than Indian quoted in Bombay ranged from Rs. 19 to Rs. 20-3-0 for Natal coal, Rs. 19 for Transvaal coal, and Rs. 23-4-0 to Rs. 27 for British coal. On the basis of the lowest of these prices, that of Rs. 19 for Transvaal coal, the f.o.r. price for Indian coal would work out at Rs. 5-8-0. In Bombay there is a prejudice not against Indian coal as such but against the exporters of it; so the Bombay importer has to be convinced not that there are good Indian coals but that he can be certain of getting them. For the present, account must be taken of the prejudice and, until it is overcome, it does not seem safe to place the f.o.r. price of Indian coal at more than Rs. 5 per ton.

Bombay.

34. At Karachi the latest c.i.f. prices of coals other than Indian ranged from Rs. 18-8-0 to Rs. 19-4-0, for Transvaal coal, Rs. 19 to Rs. 20-10-0, for Natal coal and Rs. 20 to Rs. 25-11-0 for British coal. Working on the same lines as before, on the lowest of these prices, *i.e.*, Rs. 18-8-0 for Transvaal coal, we obtain an f.o.r. price of Rs. 5 for Indian coal. This allows of no margin for difference in quality. No definite percentage was mentioned in Karachi as in other ports, but witnesses stated generally that South African coal at the same price is much better value than Indian.

Karachi.

35. We have no figures as to prices in ports which we did not visit except for Aden, where in January, 1925, the price for Transvaal coal trimmed into bunkers was Rs. 27-11-0, for ordinary Welsh coal Rs. 33-0-0 and for best Welsh coal Rs. 37-14-0.

Aden.

36. On the assumption that all the charges which go to make up the c.i.f. price of coal, with the exception of the pit-head price, remain at the level on which we have worked, the result of the above discussion is to show that, except in Rangoon and Madras, Indian coal can only hope to compete in overseas markets if its pit-head price is not higher than Rs. 2 to Rs. 2-8-0 for Singapore, Rs. 5-5-0 for Colombo and Rs. 5 for Bombay and Karachi. We trust that it will be clearly understood that we claim no absolute accuracy for these figures. We have in particular taken rates for steamer freight which are from 8 annas to Re. 1 higher than the rates prevailing at the time of writing. We merely offer them as an approximate gauge of the serious competition which Indian coal has to face in overseas markets. As we have explained above, we have worked on the basis of the railway rate for the Jharia field: the rate for the Raniganj field is lower and Re. 1 approximately should therefore be added to each of these figures for Raniganj coal. As will be seen in the next chapter where we discuss the situation at the collieries, average raising costs cannot be placed at a lower figure than Rs. 5 for the Jharia field and Rs. 6 for the Raniganj field. The advantage which the Jharia field has over the Raniganj field in regard to raising costs is thus almost exactly nullified by the advantage which the latter has from being nearer to the docks. What the figures unquestionably establish is that the difference between the raising costs and the f.o.r. price at which coal must be sold in order to enable it to compete in overseas markets is negligible except for Singapore where there is a large margin on the wrong side. There is no scope for appreciable reductions in the comparatively insignificant item of the c.i.f. price contributed by the charges for wastage, insurance and finance. In the chapters which follow we shall examine the possibility of reduction in the other items, colliery costs, railway freight, port charges and steamer freights.

Summary of the discussion regarding comparative prices.

37. Before passing on to this examination we would mention the handicap imposed on Indian coal by a high exchange. All our figures have been worked out on the basis of the rupee at 1*s.* 6*d.* If the rupee were to fall to its pre-war level of 1*s.* 4*d.*, it need hardly be pointed out that Indian coal would be in a more favourable position to meet competition. In Singapore the advantage thus gained would be direct, though its importance might be offset by an increase in steamer freights from Calcutta; but at the other ports that we visited a fall in exchange would give Indian coal considerable indirect assistance.

Effect of exchange.

CHAPTER III.

Possibility of Economies in the Coalfields.

Raising costs.

38. We have shown in the preceding chapter that, if the cost of raising coal is taken at Rs. 5 in the Jharia field and at Rs. 6 in the Raniganj field, this means that the f.o.r. price at which Indian coal can hope to compete in most overseas markets leaves the producer no margin of profit. Before we pass on to consider whether any reduction in raising costs is possible, it is desirable that we should explain the grounds on which we have adopted the figures of Rs. 5 and Rs. 6 for the Jharia and the Raniganj fields respectively. The only method by which an absolutely accurate figure for raising costs could be obtained would be to have a detailed examination of the accounts of 700 collieries made by a skilled accountant. This method is obviously out of the question and we have, therefore, had to rely on the evidence of individual witnesses which, when it went beyond the quotation of actual figures for particular mines, was not unnaturally coloured by the conditions of the mines of which they had experience. The extent to which conditions vary from mine to mine hardly needs emphasis. The raising costs in a mine where coal is quarried or worked by inclines must differ from those in a mine which has shafts several hundred feet deep. Again, the raising costs of a mine with an output of a few thousand tons annually cannot be a guide to those of a mine which produces over 100,000 tons a year. None the less, there was sufficient agreement among the witnesses who gave evidence on this point to justify our acceptance of the figures that we have quoted. The Indian Mining Federation submitted two statements. The first showed in detail the average costs of raising a ton of coal in a colliery with an output of 2,000 tons per month, in which the work is not carried on through contractors, as Rs. 4-10-0 per ton, but this included allowances for income-tax and depreciation, which were omitted by other witnesses in arriving at their estimate of costs. The second gave the average raising costs per ton for six large companies in recent half years, as extracted from their published accounts. These did not include depreciation on block account or taxes and cesses and varied between Rs. 4-10-0 and Rs. 8-10-4. The largest of these companies, the Bengal Coal Company, has 14 or 15 collieries in the Raniganj field; and its average figure for the second half of 1924 was Rs. 5-7-10.

Much of the information we received on this point was confidential. One firm of managing agents with large interests in the Jharia field informed us that their "all-in" costs were Rs. 5 per ton, and we have been shown the figures for three large collieries in the same field managed by another firm, the average for which works out at almost exactly Rs. 5. The raising costs for seven

collieries in the Raniganj field managed by another firm have also been supplied to us: these varied in the last four half years between Rs. 4-4-4 and Rs. 6-4-5, when all charges except depreciation are included.

Valuable independent confirmation of the figure of Rs. 5 for the average raising cost per ton in the Jharia field is furnished by the figures for the working costs of the East Indian Railway Giridih colliery which we have obtained from the Chief Mining Engineer. Giridih is outside the Jharia field, but the conditions there closely approximate to those in Jharia and the modern plant and equipment of the colliery are such as to make it in every way representative of the collieries working first class coal in that field. The raising costs for this colliery for 1923-24 were Rs. 4-14-11. This includes provision for sinking fund, but on the other hand the colliery pays no royalty and is not debited with any Calcutta charges.

It may be added that there was practically unanimous agreement that the costs in the Jharia field averaged about Re. 1 less per ton than those in the Raniganj field. The difference is attributed partly to the fact that in the Raniganj field there is very little quarry or incline work and the shafts are, as a rule, deeper, partly to the output of the collieries being less on the average so that the incidence of the overhead costs is greater and partly to more difficulty in obtaining labour and its higher cost.

Effect of legislation on costs.

39. Our conclusion is that the best evidence available goes to show that Rs. 5 and Rs. 6 may be adopted without hesitation as the average raising costs for the Jharia and the Raniganj fields. These figures represent an increase of at least 50 per cent. over the level of costs in the period immediately preceding the war and of about 100 per cent. over those of 15 to 20 years ago. The greater part of this increase has been contributed by the increased wages paid to labour. The substantial increase granted in 1920 not only to miners and to surface and under-ground labour, but also to the executive and clerical staff was estimated at the time by the Indian Mining Association as representing an increase of at least 8 annas per ton in the cost of raising. Another important contributing factor has been the increased cost of stores and, in this connection, the effect of the new steel potective tariff cannot be ignored. Frequent mention was made in the evidence before us of the effect of legislation in increasing costs. The requirements of the new Mines Act, the new Boiler Act and the Workmen's Compensation Act together with the higher standard demanded in such matters as housing, sanitation and water supply have undoubtedly contributed their quota to the enhanced cost of raising coal, but even at the highest estimate the cumulative effect of these cannot, in our opinion, be placed at more than four annas per ton. The influence of legislation on costs is thus not comparable in importance with that of the increase in wages. It would be a very different matter, however, if female labour in mines were prohibited. On the merits of this proposal it would not be within our province to express an opinion, but we must refer to its probable

results. It is, we think, admitted on all sides that if the employment of women under-ground were prohibited, except very gradually, this would result in, at any rate, a temporary disorganisation of the coal industry consequent on the heavy reduction in output and the increase in costs which would follow, but some of those who favour the prohibition of female labour consider that matters would soon be adjusted. We must however stress the serious effect which this disorganisation, however temporary, would have on the ability of Indian coal to compete in overseas markets. From the point of view of our enquiries the present does not appear an opportune time for change.

Possibility of reduction in wages.

40. In the present depressed state of the coal industry, the inducement to economise in every possible way has obviously been so overwhelming that most witnesses not unnaturally regard further economies beyond those already effected as altogether impracticable. They take the view that a further reduction in costs could be made only if output were increased and if the necessity for stacking could be avoided altogether or in part, and that the most obvious way to reduce raising costs, by reducing the wages which form so large a proportion of them, is also the most undesirable. They take this view although they realise that the labour in Indian mines is inefficient and that in no country in the world, which has a coal industry of any size, is the output per head per annum as low as it is in India. The output per head per annum is 193 tons in Natal, 316 tons in the Orange Free State and 328 tons in the Transvaal and, even allowing for the easier mining conditions in South Africa a comparison between these figures and the output of less than one hundred tons per head per annum in this country is not favourable to India. The reasons for this are so well known that a brief reference to them is all that is needed here. They are that the labourer in the Indian coal fields is primarily an agriculturist and, considered as a coal-miner, is merely a casual and unskilled worker and that his standard of comfort is so low that the only effect of an increase in wages is a decrease in output, as he can obtain the amount which he needs by working fewer days in a week. The statistics available would appear to bear out the contention that the increase in wages in 1920 was followed by a reduction in output. In 1918, the average output per head per annum was 108 tons; in 1919, 111 tons; in 1920 and 1921, 94 tons; in 1922, 95 tons and in 1923, 98 tons. But it is worthy of note that one witness with very long experience of the coalfields was of opinion that this reduction was not the result of the increase in wages, but was due to a succession of good harvests. Whatever the cause of the fall in output, the view generally held was, as we have said, that the best interests of the coal trade would not be served by any attempt to reduce wages. It may be that this view was partly the outcome of a feeling that any reduction in wages would drive labour back to the land and that, in any event, the coal industry is not sufficiently organised to enable it to make such an attempt successfully; but we think

it more correct to attribute it to the feeling that the miner is not overpaid in view of the nature of his work which is less congenial than work in the mills and far less so than agricultural work. Even at the mines work on the surface is much preferred to work underground. On this view, the true solution of the problem of the small output per man is to be found only in a general rise in the standard of living among the miners.

Effect of mechanical coal cutters on cost of raising.

41. We entirely concur in the view that no reduction in raising costs can in present conditions be secured by reducing wages; we must now consider whether the desired effect could be secured by increasing the use of mechanical appliances for cutting coal. Experience shows that machines do not reduce but in fact increase slightly the actual cost per ton of cutting the coal. Although the work of machine cutting is easier, a rate of wages which is high as compared with that for hand-cutting when the nature of the work is considered, has to be paid to machinemen under present conditions until a labour force has been trained in the new methods. An important factor in the increased cost of machine cutting is the high cost of explosives, put by some witnesses at as much as six annas per ton on the coal cut. The saving in costs which is secured by the introduction of mechanical coal cutters is due to the great reduction in overhead costs which follows from the increased output when the machines can be used to their full capacity. But it is in evidence that the machines cannot be used with real effect and the output is therefore less than it should be by some 40 per cent., owing to the collieries not being able to obtain a regular supply of suitable wagons. The factors which force the collieries to adopt the uneconomical method of stacking coal in large quantities hamper output so materially that the machines have not led to that saving in overhead costs which the companies concerned had every right to expect. This is an additional reason for the improvements in railway working, which we recommend elsewhere in our report, and, in particular, for the supply of none but open wagons to collieries with mechanical loading appliances.

Reduction in salaries.

42. One suggestion for reducing costs which was made to us was that the salaries of the superior colliery staff should be reduced. Such evidence as we have received on this point shows that the increase in the salaries of the superior staff has followed the increased cost of living and that any reduction, even if it did not affect efficiency, would only bring down raising costs to a negligible extent.

Suggestions for improved methods of working.

43. Three possible improvements in working methods which were mentioned to us appear to deserve the consideration of some collieries. The first was that rails should be laid right up to the working face in order to permit of the tubs being loaded direct by shovels. This would obviate the necessity of carrying the coal in baskets to points which are often several hundred feet distant. The second was that work should be concentrated on small areas in the mines as this would lead to decreased costs on account of supervision,

machinery, and plant. This would not be practicable where several seams are being worked in the same mine and where it would therefore not be possible, even if it were desirable, to load from one wharf all the coal produced. The third is the introduction of regular shifts of work. It is obvious that if work can be concentrated between definite hours on certain days in a week, some reduction in overhead costs can be secured. We were informed that some collieries in the Dishergarh area in the Raniganj field have decided to reduce the number of working days, in other words to restrict work to four or five days instead of keeping the pits open for seven days. This example appears to be worthy of general imitation, although little saving could be effected in this direction in collieries in which coal is merely quarried or worked by inclines.

Two main methods of reducing costs.

44. Even if the methods mentioned in the preceding paragraph were generally adopted, their effect in reducing raising costs would be very small. On the evidence before us we are forced to the conclusion that there are only two ways in which any appreciable reduction can be secured. The first of these is the increase in output by machine working to which we have already referred and the second is the avoidance of stacking. It is necessary to examine this question in detail. If stacking could be avoided, that is if all the coal raised from a mine could be loaded directly into wagons and no part of it were dumped, the resultant saving in pit-head costs would be appreciable. In the first place, the loading would be done in one operation and not in two, and this would save the cost of an additional handling which is very considerable when the output of the mine is large. Besides the direct cost of the labour there are also additional charges for recruiting and housing, and the labour employed in stacking and re-stacking coal could be much more profitably employed on under-ground work. Estimates of the extra cost incurred for additional handling varied greatly but the figure usually given was from two annas to four annas per ton. Another and more important fact has already been mentioned, namely that, if it were possible to load the coal as raised direct into wagons picking and screening could be done and the coal could be despatched in a condition attractive to buyers. A third avoidable loss caused by stacking is that due to deterioration, which commences as soon as the coal is put into stack. How important this loss would be throughout the two coalfields could only be estimated if exact figures were available not only for the amount of coal actually stacked but also for the rate at which it deteriorates. The amount of coal stacked varies greatly from colliery to colliery and from month to month; it is very largely governed by the season of the year and also by the degree to which a colliery receives preferential treatment in the matter of wagon supplies. The proportion of coal stacked in the two fields was placed by some witnesses as high as one half. The rate of deterioration depends not only on the height of the stack, the time for which the coal remains in the stack and the extent to which other coal is moved over it on tram lines but

also on the character of the coal. Dishergarh coal, for example, is very friable and disintegrates much more rapidly than coal from the Jharia mines. The estimates that we received for deterioration from stacking varied from ten to thirty per cent. and are thus much the same as those given to the Coalfields Committee of 1920. If we follow that committee in taking the deterioration at 15 per cent. and assume an average value for the coal of Rs. 7-7-0 per ton as in 1923 the loss per ton from this cause works out at Rs. 1-2-0. The total loss from handling the coal and from deterioration in stack is thus Rs. 1-4-0 to Rs. 1-6-0 per ton. In addition there is almost always an appreciable loss from pilferage and a risk of loss of the entire stack from fire, specially in the Raniganj field. When full weight is given to all these considerations, we are of opinion that, spread over the whole output of the two fields and not over that portion only of it that is actually stacked, eight annas per ton is a very conservative estimate for the loss from stacking. The coal trade is emphatic in its opinion that the whole of this loss could be avoided if adequate facilities for removing the coal were provided. This we consider a somewhat exaggerated view because, if a colliery is to comply with all the orders that it receives, it must have a reserve of coal on hand to compensate for the decreased output during the months of April to September when the labour supply is at its lowest owing to marriage festivals and agricultural operations. This reserve however need only be a small one and we agree that the greater part of our estimate of eight annas could be saved if coal could be despatched from the collieries as it is raised. Our conclusion is that a reduction in colliery costs must in the main depend on improvements in railway facilities. We therefore pass on to a detailed consideration of the working of the

CHAPTER IV.

Transport of coal by rail.

Coal Traffic Conference of 1912.

45. It is perhaps hardly necessary to mention that the two railways which serve the Bengal coalfields are the East Indian and the Bengal Nagpur. The Eastern Bengal Railway also is concerned to some extent with the movement of coal for export because coal-traffic coming down the East Indian Railway for the docks passes over that section of the Eastern Bengal line which lies between Naihati and Dock Junction. We attach a map which shows the communications between the Bengal coalfields and Calcutta.

The working of the railways serving the Bengal coalfields has always given rise to complaints from the coal trade. In considering these, we need go back no further than 1912 when a representative conference, appointed by the Government of India to consider the whole question of the transport of coal, dealt with them in detail and formulated recommendations which, it was hoped, would remove them: a summary of these recommendations will be found in Appendix XV which shows the action taken on each of them by the three railways concerned and by the Port Commissioners. It will be seen that the great majority of the recommendations have been carried into effect and that, where nothing has been done, there has been good reason for inaction: but we find that in spite of the improvements effected the coal trade is still dissatisfied with the working of the railways. That this should be so is scarcely surprising in view of the peculiar difficulties which confront the railways owing to the congestion of the collieries in the Jharia coalfield. It is unnecessary to dilate on a truth which has been recognised in every report dealing with the Indian coal trade but we must emphasise the fact that in no other country is there such a congeries of mines, with so small an average output, each demanding separate siding accommodation and each claiming a regular supply of wagons.* The strain that this imposes on the railways has been intensified of late by the opening of new collieries, as the following statement will show:—

Year.	No. of coal mines in India.	No. in Bihar and Orissa.	No. in Bengal.
1912	527	..	..
1913	602	365	154
1914	610	377	178

* It is worthy of mention that in 1923 when the 827 collieries in Bengal and Bihar and Orissa produced 17,834,000 tons of coal or an average output of 21,560 tons from each mine, the 69 collieries in South Africa produced 10,640,000 tons, or an average output per mine of 154,000 tons. These are long tons.

Year.	No. of coal mines in India.	No. in Bihar and Orissa.	No. in Bengal.
1915	583	354	176
1916	565	344	169
1917	694	444	190
1918	719	451	200
1919	741	466	216
1920	783	476	240
1921	884	522	268
1922	953	561	283
1923	942	557	270

No less than 100 new mines in Bihar and Orissa and 21 in Bengal were opened out in 1917, and the expansion in the number of mines in the coalfields was most rapid in the very years when restrictions imposed on expenditure owing to war conditions made the railways least able to cope with it. We shall advance many suggestions for the improved working of the coal traffic both in the coalfields and thence to the Kidderpore Docks, but after studying the system in detail we cannot but express our appreciation of the manner in which, since the return to more normal conditions, the railways have grappled with a most difficult problem.

Volume of coal and other traffic.

46. In the very full and detailed replies to our questionnaire which were submitted by the East Indian and Bengal-Nagpur Railway authorities will be found statements showing, both for coal and for other traffic, the quantity carried and the number of wagons loaded in each half-year from 1912 onwards. A summary of these statements is given below:—

Year.	Coal Traffic E. I. R.	Coal Traffic B. N. R	Other Traffic E. I. R.	Other Traffic B. N. R.	Wagons loaded with coal E. I. R.	Wagons loaded with coal B. N. R.	Wagons loaded with goods other than coal E.I.R.	Wagons loaded with goods other than coal B.N.R.
	Tons	Tons	Tons					
1912 . .	10,051,120	3,264,000	6,654,518	3,176,000	583,716	164,419	Not available	Not available.
1913 . .	10,496,338	3,309,000	6,210,486	Not available	619,439	167,357	Ditto.	,,
1914 . .	10,536,454	3,353,000	6,602,554	,,	623,069	168,432	445,553	,,
1915 . .	10,630,794	3,336,000	6,506,600	,,	611,014	167,410	451,661	,,
1916 . .	11,880,635	3,741,000	5,920,015	,,	687,850	182,634	429,987	,,
1917 . .	11,747,607	3,718,000	5,788,745	,,	651,054	182,686	388,652	,,
1918 . .	12,234,016	4,010,000	5,910,264	,,	665,681	199,557	318,551	,,
1919 . .	12,117,965	3,977,000	5,949,578	,,	683,896	204,277	357,492	,,
1920 . .	12,341,848	4,037,000	5,996,408	4,430,000	696,409	209,422	370,247	,,
1921 . .	11,822,847	4,077,000	6,282,320	4,301,000	666,441	203,677	391,272	,,
1922 . .	10,382,958	4,202,000	5,658,427	4,994,000	561,910	225,277	301,505	,,
1923 . .	11,702,542	4,041,000	6,449,830	5,334,000	652,739	202,134	367,604	,,
1924 . .	13,400,800	..	7,179,648	7,019,000	934,654	..	419,551	,,

This statement brings out several points of interest. It shows that on the East Indian Railway the coal-traffic, amounting as it does to some two-thirds of the total traffic, is much heavier both absolutely and relatively than on the Bengal-Nagpur Railway, on which it accounts for rather less than half the total. It also shows that in 1924 the East Indian Railway handled over a million tons more coal than in any previous year and about a million and a quarter tons more than in 1919, when the raisings exceeded by two million tons the highest figure recorded before or since. For the distribution of coal traffic in the upwards and downwards directions we must refer to the detailed statements submitted by the two railways. Prior to the war, the downwards traffic which consists mainly of traffic to Calcutta and the docks was, on both railways, about half as great again as that in the upwards direction. But this proportion was reversed during the war, when Bombay and Karachi had to import coal not by sea from Calcutta but by the all-rail route across India. On the Bengal-Nagpur Railway the coal-traffic upwards is still about twice as great as that downwards: on the East Indian Railway the downwards coal traffic has only in one year since the war exceeded that upwards, and at present the traffic in either direction is almost equal.

Wagon requirements of the coalfields.

47. On no point regarding the working of the railway did the representatives of the coal trade who appeared before us lay more stress than on the necessity for a more adequate and more regular wagon supply, that is on a supply which would approximate more nearly to the requirements of each colliery and which would not vary so greatly from day to day as it does at present. As regards the adequacy of supply, it is a matter of common knowledge that the difficulties are acute in the first half of the year. The labour employed in the coalfields is primarily agricultural and so the colliery raisings are highest from February to May, when agricultural operations are more or less at a standstill. The result is that the demand for wagons on the coalfields reaches its maximum at a time when the demand for wagons to move all other traffic is at its heaviest. In the second half of the year, the wagon supply is scarcely, if at all, less than the demand.

A suggestion often made is that the railways should procure enough new wagons to enable a full supply to be given to the collieries throughout the year. But, needless to say, the wagon requirements of the coalfields must be considered not as an isolated problem but as part of one that affects the whole of India. Even if the railways of India could provide enough wagons to meet in full, day by day, the demands on all parts of their systems during the first six months in each year, to do so would be uneconomical and would react on the freights charged on all commodities including coal. It would mean that a very large number of wagons would be lying idle and so earning no revenue during the second half of the year, and it would involve considerable expenditure on sidings in which to accommodate the spare stock during that period. None

the less we consider the two railways concerned should take immediate action to place themselves in a position to give collieries a much better daily wagon supply during the first six months of each year than they can at present, either by additions to their wagon stock or by utilising that stock to better advantage or by both these methods.

In this connection, it should be mentioned that the wagon position has been distinctly eased since the introduction in 1921 of the pooling system. Prior to that year, a railway could not load wagons belonging to another railway except locally in the direction of the railway which owned them or to a station on that railway or *viâ* that railway to a station beyond it. Now it can load to any destination any wagons except certain special types that have been exempted, and, if it runs short of wagons, the Director of Wagon Interchange, who works the system from his headquarters at Allahabad, arranges for wagons to be sent to it by other railways which have wagons on their systems in excess of the number that they require and of the number that they own. The Agent of the Bengal-Nagpur Railway expresses himself as by no means certain that any improvement in the supply of wagons under the pool is not neutralised by the large number of wagons held up at times for repairs: but we understand that the condition of the wagon stock is improving every day. We consider that the introduction of the pooling system has led to a definite improvement in wagon facilities and have little doubt that to it, in large measure, must be attributed the ability of the East Indian and the Bengal-Nagpur Railways to move in 1924 a larger tonnage both of coal and other traffic than ever before. Since the introduction of the pool, as the Agent of the East Indian Railway has informed us, the chief factor limiting the supply of wagons to the coalfields is ordinarily not lack of wagons but the need of increased facilities for dealing with them both in the coalfields and elsewhere.

Improvements in railway facilities in the coalfields.

48. Before we proceed to discuss the increased facilities provided in recent years for dealing with coal traffic in the coalfields, we think it well to give a sketch of the manner in which that traffic is handled. For the East Indian Railway purposes the Jharia coalfield is divided into sections of which Kusunda, Katrasgarh, Pathardihi and Jherriah are the depot stations. From these depots the empty wagons are sent out to the various colliery sidings and to them the loaded wagons are brought for weighment, marshalling and despatch. Dhanbad is the headquarters of the administrative staff for this field. In the Raniganj field, Asansol is the railway administrative headquarters and the depot stations are Asansol, Ondal, Sitarampur, Giridih and Barakar. The Divisional Superintendent at Asansol controls the working of both fields. The Bengal-Nagpur Railway's administrative headquarters for both fields are at Adra. They have three depot stations, which on this railway are known as "weighment bases,"* at Radhanagar and

* Throughout this report we use the term "depot station" to include both E. I. R. depot stations and B. N. R. "weighment bases"

Chourashi in the Raniganj coalfield and at Bhojudih in the Jharia field. At Bhojudih, wagons after weighment are made up into train loads and despatched *viâ* Adra and *viâ* Anara, but from Radhanagar and Chaurashi the loads are sent to Adra to be dealt with. A reference to the map which we have attached to the report, showing the railway communications in the coalfields, will make the position clear.

That the railways are fully alive to the necessity of increasing the facilities for dealing with the coal traffic in the coalfields will be evident from the following brief statement of improvements effected since 1921, maps illustrating which are attached to our report. On the East Indian Railway, the Katrasgarh yard has been remodelled and its capacity increased to 350 wagons per day. The Kusunda yard is in process of remodelling and its capacity will be increased from 450 to 650 wagons per day. Alterations are being carried out in the Jherriah yard which will increase its capacity from 250 to 350 wagons daily. The capacity of the Pathardihi yard has been increased from 350 to 400 wagons and that of the Barakar yard from 100 to 150 wagons daily. At Dhanbad, four additional receiving lines for empty wagons are being provided and other minor alterations which will simplify movements are being carried out. At Asansol, the remodelling which is in process will double the amount of the coal and other traffic which it is possible to handle and a small marshalling yard is being provided to deal with the traffic originating on the pilot sections worked from this depot station: the rearrangement of the up-yard in order to expedite the movement of rolling stock is also under consideration.

On the Bengal-Nagpur Railway, the Bhojudih marshalling yard has been completely remodelled and its capacity increased from 600 to 1,200 wagons daily. Mohuda is in process of conversion from little more than an ordinary road-side station with weighbridge facilities into a marshalling yard capable of dealing with 300 wagons daily. The Malkera yard is being remodelled and converted into a weighment base station, while Anara from a mere roadside station will become a marshalling yard with an estimated capacity of 400 to 500 wagons daily and will have a locomotive shed and yard. Joychandpur has also been remodelled. Additional block-huts have been constructed at Amlabad, Dugda and Amlo, which should facilitate the movement of coal traffic. Avoiding lines have been constructed in the vicinity of Mohuda and Adra whilst an alternative route for trains proceeding *viâ* Parbad and *viâ* Bhowra has been provided by the extension of the Bhowra branch line to connect with the Jamadoba loop and the establishment of a crossing station at the junction of the Bhowra and Jamadoba loop. The following lines have been doubled:—

	Miles.
Bhojudih to Rukni	9·248
Anara to Kandra	58·464
Gomharria to Korkai	4·7
Sini to Chakradharpore	22·097

and the doubling of the line from Chakradharpore to Goikera, a distance of 20·9 miles, is in process. But in spite of the provision of these facilities we would record our general impression that the supply of wagons to collieries on the Bengal-Nagpur Railway is still very inadequate and irregular and we consider that the position calls for serious consideration on the part of that railway.

Capacity of depot stations.

49. Until the improvements at present in progress are completed, it is not possible to estimate the extent to which they will relieve congestion in the coalfields. Complaints were made to us that the collieries on certain pilot sections, notably Pathardihi and Jherriah on the East Indian Railway, were unable to obtain their proportionate shares of the available wagons owing to the lack of capacity in the depot stations which serve them. As we have mentioned above, the capacity of these two yards is being increased, but we are not in a position to say whether the increase will be such as to remove all complaints; nor are we in a position to make specific recommendations in respect of particular yards or pilot sections. We consider, however, that collieries on any section have a legitimate grievance if, when wagons are available and indents elsewhere are being met in full, they are unable to obtain a full wagon supply merely because the capacity of the depot station by which they are served is insufficient. We, therefore, recommend that the railways should make a detailed examination of the capacity of each of the depot stations and that they should enlarge any depot station which is found to be too small to allow of full supplies of wagons being given to the collieries on sections served by it when they are being given to collieries on other sections.

Improvements in railway facilities outside the coalfields.

50. Between the coalfields and Calcutta the most important additions in recent years to railway facilities have been the construction of the chord between Burdwan and Howrah, which was opened to traffic on the 1st of January 1917, and the doubling of the line between Burdwan and Khana Junction, both on the East Indian Railway.

At present the point on this railway where the regular flow of coal traffic to the docks is most hampered is the difficult section between Bandel and Naihati including the Jubilee bridge which with its interlaced tracks is a fruitful cause of delay. The avoidance of this section would greatly expedite traffic between the coalfields and the Kidderpore Docks. We have, therefore, examined with great interest the evidence regarding the projected construction at Bally of a bridge across the Hooghly which would allow coal traffic to leave the main line at Burdwan and to reach the docks *viâ* the Burdwan-Howrah chord without passing through Naihati. We attach such importance to the expeditious handling of coal-traffic as a factor in the revival of the export trade that we strongly recommend the construction of the proposed bridge with the least possible delay. Meanwhile, time could be saved between Bandel and Naihati if, instead of being shuttled across the Jubilee bridge,

loads were worked across it by the train-engine bringing them to Bandel. We understand that the reason why this is not done now is not that engines bringing down the trains to Bandel are too heavy for the bridge but that running through to Naihati would involve the train-staff working long hours. We would suggest that the possibility of preventing this by the provision of relief crews should be considered.

Mr. Banerjee for reasons explained in his separate note is of opinion that the Bally bridge should be reserved for goods traffic only.

The Bengal-Nagpur Railway wagon ferry.

51. Wagons for the docks passing over the Bengal-Nagpur Railway are at present transported from Shalimar to the other side of the river by a wagon ferry. Delays in transit owing to the unsatisfactory working of the ferry have been frequent in the past. The extension of the approach lines and gangways and the other improvements recently effected should greatly reduce these, but we consider it doubtful whether a ferry can ever prove a satisfactory method of transporting wagons across the Hooghly and would suggest that the Bengal-Nagpur Railway should further examine the possibility of utilising the Bally bridge for their dock traffic.

The 10-hours and 20-hours systems.

52. Our recommendations for improvements in the system under which wagons are supplied to the collieries will be clearer if they are prefaced by a brief description of that system. Empty wagons are supplied to the various depot stations in the coalfields throughout the 24 hours. They are taken out from the station by pilot engines which place them in the colliery sidings. In the same way, the loaded wagons are drawn out from the colliery siding by pilot engines which bring them into the depot stations. There the wagons are weighed, and after weighment are marshalled, either by gravity or by engine power. Separate lines are set apart in the marshalling yards for different destinations, such as the docks, Howrah, up-country intermediate, down-country intermediate, etc., and when any such line has received a number of wagons sufficient to make up a full train-load, the load is worked away.

The two systems under which empty wagons are supplied to colliery sidings and loaded wagons are drawn out from them are known as the 10-hours and 20-hours systems. On the sections where the 10-hours system is in force, the placing of empty wagons in a colliery siding and the drawing out of loaded wagons from the siding are two separate and distinct operations: the empty wagons have to be placed in the colliery siding before 7 A.M. and be loaded and ready for clearance not later than 5 P.M. Where the 20-hours system is in force, the empty wagons are placed and the loaded wagons are drawn out at the same time: but loaded wagons cannot be drawn out until the collieries have had 20 hours in which to load them. For reasons which we give later we consider the 10-hours system to be the better. It has, however, to be recognised

that it is a more expensive system to work because the larger number of pilot engines required by it entails increased staff and consequently provision of additional quarters. Its adoption generally might also mean that the capacity of depot stations might have to be increased as the loaded wagons have to come in from the collieries and the empty wagons to go out within a much more limited period than under the 20-hours system. Another disadvantage of the system is that before the empty wagons working into the depot stations can be sent out to collieries they have to be held up for a longer period than when they are taken out by pilots working under the 20-hours system.

On the other hand, the 10-hours system has many advantages. The collieries have far greater certainty regarding the hours at which wagon supplies will arrive and can make arrangements for their labour accordingly. Under the 20-hours system it not infrequently happens that the labour employed for loading has to remain idle until empty wagons arrive, whereas under the 10-hours system the wagons are already in position when the labour comes to work. Further, less siding accommodation is required when the supply of empty wagons and the drawing out of loaded wagons are two separate operations carried out at different times. Under the 20-hours system it is essential to provide two lines, or a line and a loop, in order to permit loaded and empty wagons to be dealt with at the same time: otherwise the empty wagons have to be left on the main line of the section whilst the loaded wagons are being drawn out of the siding, and thus the section is occupied unnecessarily and its capacity is reduced. Another advantage of the 10-hours system is that it entails a single instead of a double operation, as empty wagons are drawn out from a siding and loaded wagons are placed in it at different times. This means that work is greatly simplified, that the time during which the pilot section is occupied by the pilot engine is reduced to the minimum and that the capacity of the pilot section is correspondingly increased. But the decisive advantage is that under the 10-hours system the wagons remain in the colliery siding only half as long as under the 20-hours system and we consider this to be in itself a sufficient reason for the general adoption of the former.

On the East Indian Railway, fifteen out of the 37 pilots work on the 10-hours system and the railway authorities are considering the possibility of increasing this number. The Bengal-Nagpur Railway has not yet adopted the system at all. On that railway, in normal circumstances, it now takes approximately three days from the time when the wagons arrive at Bhojudih empty up to the time when they arrive back loaded from the colliery-siding and are weighed, adjusted, invoiced and ready for despatch. The adoption of the 10-hours system should at the lowest estimate reduce this period by at least twelve hours even if empty wagons are held up somewhat longer at the depot station before they go out to the collieries. In 1924 the Bengal-Nagpur Railway supplied a daily average of 687 wagons and, if half a day out of every three were saved by the introduction of the 10-hours system, the gain of 344

wagon days every third day would mean largely increased efficiency. The 10-hours system has such manifest advantages that we recommend its extension on the East Indian Railway wherever practicable and its introduction on the Bengal-Nagpur Railway.

Supply of empty wagons to collieries at regular hours.

53. The Coal Traffic Conference of 1912 considered that, in the interests of both the railways and the collieries, the supply of empty wagons to the collieries should be made at regular hours. The necessity for this was stressed in the evidence before us which showed that variations in the time of supply to collieries occurred on both the East Indian and the Bengal-Nagpur Railways. It is obvious that where the work on a pilot section is heavy on one day and light on another, the time of supply to the collieries on that section, especially to those at the end of it, must vary to some extent, but variations in the time of supply due to variation in the time at which the pilots leave the depot stations can be remedied and we consider that the railways should make every effort to ensure that the pilots work to a regular time table and leave the depot stations punctually at the same hour each day. On sections on the East Indian Railway worked on the 20-hours system it appears that the pilots have occasionally to wait for the arrival of the empty wagons required to complete the number allotted to the collieries. The daily wagon allotment on the East Indian Railway is based on three considerations, the number of empty wagons actually on hand, the number of empty wagons in transit to the coalfields of which advice has been received and the number of wagons which it is assumed will arrive in time to be supplied to the collieries although no advice of them has been received at the time when the allotment is made. It is the late arrival of the wagons falling under the last of these three categories which delays the start from the depot stations and results in irregular arrivals at the collieries. It is natural that the railway authorities should desire to minimise the number of empty wagons left on hand each day and thus to make the fullest use of their wagon supply, but in view of the great advantages to the collieries which follow if they can depend upon receiving their wagon supplies at approximately the same hour each day, we are of opinion that the daily wagon allotment should be restricted to empty wagons actually on hand and empty wagons actually in sight.

Weighment.

54. Wagons in the coalfields are weighed over automatic or steel yard weighbridges, the former being the more numerous. At some depot stations on the East Indian Railway the wagons pass by gravity over the automatic weighbridges, though they are kept under control by engine power: at the others, and at all depot stations on the Bengal-Nagpur Railway they are pushed over the weighbridges by engine power. We received numerous complaints of congestion at weighbridges and of serious delays to wagons resulting therefrom. If collieries could themselves take over part of the weighment work, this would reduce congestion and delays. It would also remove much of the trouble arising from the overloading and underloading

of wagons, with which we deal at length in Chapter VI. We understand that at Ballarshah colliery on the G. I. P. Railway a private weighbridge has ben installed by the owner, Sir Maneckji Dadabhoi, at which the weighment is done by a colliery clerk under railway supervision. The wagons are moved by engines belonging to the colliery which loads about 20 wagons daily on the average. A weighbridge has also been installed at the G. I. P. Railway colliery at Kargali and plans have been prepared for another at Jarangdih colliery belonging to B., B. and C. I. Railway. We attach plans of these sidings as they illustrate the method of working a colliery siding which has its own weighbridge. The cost of putting in and of running the Kargali weighbridge is shown in the following statement. This siding was put in to deal with an output of 3,000 tons a day and it should be possible to provide and work weighbridges at private collieries, in ordinary circumstances, at a lower cost.

Capital cost.

Weighbridge machine	19,500
Railway freight on weighbridge . .	500
Housing of weighbridge	2,027
Cost of 3 quarters for B.-N. Railway staff in colliery	6,100
Cost of alteration and extension to main siding	25,000
Cost of signalling and block hut paid by colliery	12,763
Cost of second-hand locomotive . .	13,000
TOTAL .	78,890

Running cost.

Wages paid by colliery per month for Bengal-Nagpur Railway block hut and weighbridge staff	350
Wages paid by colliery for its own weighbridge staff	125
Wages of staff for three locomotives and line running staff in connection with weighbridge	450
TOTAL .	925

It will be seen that both the colliery and the railway employ staff at the weighbridge. The weighment return is issued at the colliery weighbridge by the railway clerk and the wagons are not delayed at any depot station either for weighment or for marshalling.

The installation of private weighbridges would solve so many difficulties that we consider a full investigation of its possibility to be most desirable. The matter is of sufficient importance, in our

view, to justify an officer being placed on special duty in the coalfields to examine the layout of the existing sidings and to report to what extent the installation of private weighbridges and the provision of the necessary facilities for passing wagons over them would be feasible. We consider that the actual work of weighing the wagons passing over the weighbridges should be carried out by the collieries, under such supervision by railway staff as the railways may consider desirable. The cost of the weighbridges and of the staff required to work them should be met by the collieries which would be compensated by a reduction in the terminals at present charged by the railways in the coalfields. When wagons are weighed on railway weighbridges, it is obviously more satisfactory to the collieries and the railways if a representative of the colliery concerned is present. This practice is not so common as it should be, although the railways encourage it by the grant of free passes to the representatives of collieries which are at a distance from the weighbridge. Small collieries find it hardly worth their while to detach a member of their staff from his work in order to enable him to be present at the weighment of two or three wagons in the twenty-four hours and even large collieries complain that they cannot be certain of their representatives being present at the time when their wagons pass over the weighbridge. We, therefore, recommend that adjacent collieries should combine to have a joint representative always at the weighbridge as is occasionally done now.

Marshalling.

55. At present train loads are made up at the depot stations for the docks as a whole and not for particular steamers. The result is that wagons which leave a colliery together for a steamer by no means always reach the docks together, but arrive in dribblets separated sometimes by intervals of as much as three or four days. This so greatly hampers the speedy and satisfactory loading of ships that we advocate every effort being made by the railways to assemble into full trainloads wagons intended for the same ship. There does not appear to us to be any inherent difficulty in doing this when sufficient wagons are forthcoming from collieries served by the same depot station. The objection has been raised that although the wagons might come into the same depot station, they would be brought in at different times and by different pilots and that, at a busy depot station, it might not be possible to reserve a marshalling line for them until sufficient wagons arrived to make up the trainload. We do not consider that this difficulty, which could be met by the provision of additional marshalling lines, should be accepted as an insuperable objection to a proposal which, if carried into effect, would go far to facilitate rapid transit to the docks and to meet the Port Commissioners' complaint of the irregular arrival of wagons intended for the same steamer. Shippers of coal would have to assist the railways by arranging as far as possible that their coal should be loaded in trainloads either by a single colliery or by collieries on pilot-sections served by the same depot station. If the coal for a particular steamer is loaded in small lots at a number

of collieries scattered all over the coalfields and served by different depot stations, it is impossible for the railways to collect the wagons in order to make them up and despatch them in full trainloads and rapid transit by railway and rapid handling at the docks are alike seriously handicapped.

Turn-round of wagons.

56. The average turn-round of wagons between the coalfields and the docks is placed at 5·9 days by the East Indian Railway and at 11 days by the Bengal-Nagpur Railway. The figures have not, however, been worked out on the same lines and to base a comparison on them would not be fair to the latter railway. The comparison, in our view, should be based on the time taken between the easternmost point on each railway in the coalfields and the two dock-junctions, which are the points of interchange with the Port Commissioners. The two former are Ondal on the East Indian Railway and Bhojudih on the Bengal-Nagpur Railway. The distance from Ondal to east dock junction and back is 254 miles, while that from Bhojudih to west dock junction and back is 386 miles. The average turn-round of wagons from Ondal to Ondal is 4½ days or 108 hours and from Bhojudih to Bhujudih 9 days and 11 hours or 227 hours. The average mileage per hour is thus no more than 2·35 on the East Indian Railway and 1·70 on the Bengal-Nagpur Railway. There is room here for great improvement and we consider it therefore most essential that a constant and unremitting check should be kept on the time taken at every stage of the movement of wagons from the coalfields to the docks and back. This means a check on the time taken in supplying wagons to the colliery sidings and in clearing the loaded wagons from them; on the time taken in weighing, marshalling and despatching the loaded wagons; on the time taken in transit between the point of despatch and the dock-junction; and, lastly, on the time taken in transit by empty wagons between the dock-junction and the coalfields. A further check is also necessary on the turn-round of wagons in the port, and this, as we mention in Chapter VII, is at present being carried out by the Port Commissioners.

Train control.

57. We consider that the control over the movement of trains should be so worked as to enable traffic intended for the docks to be pushed through as rapidly as possible and that it should be improved to a point at which it will be possible for the railways to advise shippers of the number of wagons loaded and despatched for a particular ship, the date of despatch and the approximate position of the wagons at the time when any enquiry about them is made.

Provision of vacuum brakes.

58. We need make no specific recommendation in regard to the fitting of all wagons with vacuum brakes or pipes, a point of great importance in securing the quick transit of goods trains, as we understand that considerable progress has already been made in this direction and that, after the 1st of August 1925, any railway which offers for inter-

change with another railway one of its own wagons which is not fitted with vacuum brake or pipe will incur a substantial penalty.

Reduction in number of train examinations.

59. We have only one small further recommendation to make in regard to the speeding up of the transit of goods trains between the coalfields and the docks. It is that the number of stations at which the examination of trains takes place should be reduced to the absolute minimum and that, where trains have to halt in order to permit the engines or the guards to be changed, every effort should be made to complete the train examination within the time allowed for the change.

CHAPTER V.

Railway freights, terminals and rebates.

The present position in regard to railway freights, terminals and rebates on shipment coal.

60. In their evidence before us, the witnesses from the coal trade were almost unanimous in asking that the railways should assist the trade, as regards shipment and bunker coal, in two ways. With the first of these, the guarantee of a regular and adequate wagon supply, we have dealt in the previous chapter. We now come to the second, the demand for a reduction in railway freights.

We give below a table showing in succinct form the history of the freights, terminals, and rebates charged on coal despatched to Kidderpore docks since 1912. It will be convenient to deal separately with bunker coal later. We have not thought it desirable to complicate this table by showing in it the rates from more than three centres in the coalfields. We have selected Jherriah, as the rate from that station is common to the whole Jherriah field and to both railways, and Raneegunge and Asansol, as these are two important centres in the Raneegunge field. They are both on the East Indian Railway.

Statement 1.

		1912, 1913 and 1914.			1915 and 1916.			1917, 1918 and 1919.		
		From Jherriah.	From Asansol.	From Raneegunge.	From Jherriah.	From Asansol.	From Raneegunge.	From Jherriah.	From Asansol.	From Raneegunge.
Distance for calculation of rebate.		170	132	121	170	132	121	170	132	121
		Rs. A.P.	Rs. A.P.	Rs. A.P.	Rs. A.P.	Rs. A.P.	Rs. A.P.	Rs. A.P.	Rs. A.P.	Rs. A.P.
Payable by Public	Railway despatching end terminal	...	...	...	...	...	...	0 2 0	0 2 0	0 2 0
	Dock terminal	...	...	...	...	...	...	...	...	...
	Freight	3 2 0	2 7 0	2 4 0	3 2 0	2 7 0	2 4 0	3 2 0	2 7 0	2 4 0
	Total	3 2 0	2 7 0	2 4 0	3 2 0	2 7 0	2 4 0	3 4 0	2 9 0	2 6 0
Subtract	Rebate	0 11 0	0 9 0	0 9 0	0 11 0	0 9 0	0 9 0	0 11 0	0 9 0	0 9 0
	Payments by Railway to Port Commissioners.	0 2 3	0 2 3	0 2 3	0 3 5	0 3 5	0 3 5	0 3 5	0 3 5	0 3 5
Balance earned by Railway		2 4 9	1 11 9	1 8 9	2 3 7	1 10 7	1 7 7	2 5 7	1 12 7	1 9 7

NOTE.—Rebate withdrawn altogether

The despatching end terminal charge was first introduced from 1st January 1917, and,

The rate of the terminal charge paid to the Port Commissioners

From 1912 to March 1915 . . . . Re. 0-2-3 per ton.

„ April 1915 to March 1920 . . . . Re. 0-3-5 „

Statement 1.

1920. (From 1st April 1920.)			1921. (From 1st April 1921.)			1922 and 1923. (From 1st May 1922.)			1924. (From 1st January 1924.)		
From Jherriah.	From Asansol.	From Raneegunge.	From Jherriah.	From Asansol.	From Raneegunge.	From Jherriah.	From Asansol.	From Raneegunge.	From Jherriah.	From Asansol.	From Raneegunge.
170	132	121	170	132	121	170	132	121	170	132	121
Rs. A.P.	Rs. A.P.	Rs. A.P.	Rs. A.P.	Rs. A.P.	Rs. A.P.	Rs. A.P.	Rs. A.P.	Rs. A.P.	Rs. A.P.	Rs. A.P.	Rs. A.P.
0 2 0	0 2 0	0 2 0	0 2 0	0 2 0	0 2 0	0 4 0	0 4 0	0 4 0	0 4 0	0 4 0	0 4 0
...	...	...	...	...	...	0 4 6	0 4 6	0 4 6	0 4 6	0 4 6	0 4 6
3 6 0	2 11 0	2 9 0	3 11 0	2 13 0	2 9 0	4 0 0	3 2 0	2 13 0	4 0 0	3 2 0	2 13 0
3 8 0	2 13 0	2 11 0	3 13 0	2 15 0	2 11 0	4 8 6	3 10 6	3 5 6	4 8 6	3 10 6	3 5 6
0 15 0	0 13 0	0 14 0	...	...	...	...	...	...	1 0 0	0 12 6	0 11 3
0 4 6	0 4 6	0 4 6	0 4 6	0 4 6	0 4 6	0 9 1	0 9 1	0 9 1	0 9 1	0 9 1	0 9 1
2 4 6	1 11 6	1 8 6	3 8 6	2 10 6	2 6 6	3 15 5	3 1 5	2 12 5	2 15 5	2 4 11	2 1 2

from 1st September 1920.

the rate of Re. 0 2-0 per ton was enhanced to Re. 0 4-0 per ton from 1st May 1922.

varied during the periods shown above as noted below :—

From April 1920 to February 1922 . . . . Re. 0-4-8 per ton.

„ March 1923 . . . . . Re. 0-9-1 „

It will be seen that the railway charges on coal fall under three heads: first, a terminal charged at the despatching end, imposed for the first time in 1917, secondly, the railway freight proper and, thirdly, a terminal charged at the dock end, imposed for the first time in 1922. It is perhaps hardly necessary to mention that the three charges are collected together.

The first point in the table to which we would invite special attention is that, as regards coal for export, the ultimate receipts earned by the railways are considerably less than the charges which are shown in the railway invoice and levied from the despatcher: and the second is that the difference between the ultimate receipts and the charges levied is much greater now than it was in 1912. This difference represents the rebate given by the railways to the despatcher and the terminal paid by them to the Port Commissioners. A rebate was in force for export coal in 1912, but the rebate which has been granted since 1st May 1922 is much larger: the increase is 45 per cent. on coal to which the Jherriah rate applies, 39 per cent. on coal to which the Asansol rate applies and 25 per cent. on coal to which the Raneegunge rate applies. The terminal paid by the railways to the Port Commissioners is 9 annas 1 pie on each ton of coal brought into the docks. Of this total of 9 annas 1 pie, only 4 annas 6 pies is paid by the public and the remaining 4 annas 7 pies is paid by the railways themselves. We wish especially to emphasise this because, as we found at the outset of our enquiries, the coal trade are not generally aware of the exact position in regard to the terminal charged at the docks or that any part of the railway freight is passed on to the Port Commissioners in addition to the 4 annas 6 pies specifically levied as dock terminal.

A third point which calls for comment is the smallness of the increase in the amount actually received by the railways in 1924 as compared with 1912. The balance earned by the railways in these two years is as shown below.

	1912.	1924.
	Rs. A. P.	Rs. A. P.
Jherriah	2 4 9	2 15 5
Asansol	1 11 9	2 4 11
Raneegunge	1 8 9	2 1 2

The railway receipts have thus increased only 29 per cent. from Jherriah, 33 per cent. from Asansol and 34 per cent. from Raneegunge. On the other hand the working expenses of the East Indian Railway have increased from 37·63 per cent. of their total earnings in 1912 to 60·63 per cent. in 1924 and those of the Bengal-Nagpur Railway from 45·31 per cent. in 1912 to 65·40 per cent. in 1924. Put in another way, the working expenses of the East Indian Railway were 61 per cent. and those of the Bengal-Nagpur Railway 45 per cent. greater in 1924 than they were in 1912. The working expenses of both railways have thus increased by a very much higher percentage than have their ultimate receipts from coal.

An important point which should not be overlooked in discussing the rates charged between the coalfields and the Kidderpore docks is that the rate from the Jharia field although based on a distance of only 170 miles applies to coal carried over much longer distances, varying on the East Indian Railway from 182 to 195 miles and on the Bengal Nagpur Railway from 193 to 213, notwithstanding that the latter railway has an expensive wagon-ferry to maintain.

From the point of view of our enquiries it is unfortunate that no method has yet been devised in any country in the world for separating the cost of hauling one ton of coal for one mile from that of hauling one ton of all goods one mile. Working on the cost of hauling one ton of all goods including coal one mile, the East Indian Railway show a loss of Rs. 134, and the Bengal Nagpur Railway of Rs. 1,990, on each train-load of coal for export carried to the docks from Asansol and the Jharia field respectively, *i.e.*, for distances of 143 and 202 miles. Working on the average earnings from coal per ton mile in comparison with the average cost of hauling one ton of goods for one mile, the East Indian Railway show their loss at Rs. 107-4-0, whilst the Bengal Nagpur Railway working on the basis of the cost of one train mile show not a loss but a profit of Rs. 170. The disparity between these different estimates shows the impossibility of ascertaining what margin of profit, if any, is left to the railways by the present rates on the coal which is exported. All that can be gathered with certainty from the figures is that, when interest on capital is included, the cost of hauling one ton of goods one mile has increased on the East Indian Railway from 2·29 pies in 1912 to 4·06 pies in 1924, or by 77 per cent., and on the Bengal Nagpur Railway from 3·57 pies in 1912 to 4·72 pies in 1924, or by 32 per cent. The cost of hauling a goods unit on the East Indian Railway has thus increased by a percentage which is more than twice that by which the ultimate receipts from coal have increased, whilst on the Bengal Nagpur Railway the increased percentage is much the same for both. It must be remembered in this connection that the cost of hauling one ton of coal one mile may reasonably be taken as less than that of hauling one ton of all goods, including coal, one mile: for coal is not loaded or unloaded by the railway staff, is carried in full wagon loads and to a very large extent in full train-loads, and, being always or almost always carried at owner's risk, involves the railways in no responsibility in connection with claims. But although this means that estimates which are based on the average cost per mile of hauling one ton of all goods may be too high for coal, it does not make it any the easier to ascertain the actual costs.

Railway rebate in South Africa.

61. Numerous reference were made in the course of our enquiries to the rebate on the carriage of export coal which is given on South African railways. As considerable misapprehension appears to exist regarding the exact amount of this rebate, it may be

well to give the facts as ascertained from the Reports of the General Manager of Railways and Harbours in the Union of South Africa for the last three years ending with March the 31st, 1924. The following statement shows the position in November, 1922.

STATEMENT II.

	Pre-war rates.	Rates in force in November, 1922.		Increase in November, 1922, over pre-war rates.	
	Per ton of 2,000 lbs.	Per ton of 2,000 lbs.	Per ton per mile.	Per ton of 2,000 lbs.	Per cent.
		Witbank to Delagoa Bay 276 miles.			
	s. d.	s. d.	s. d.	s. d.	
Bunker	6 1	13 11	0 ·61	7 10	129·0
Shipment	5 1	5 9	0 ·25	0 8	13·1
		Hattingspruit to Point (Durban) 241 miles.			
Bunker	5 11½	13 9½	0 ·69	7 10	131·5
Shipment	4 11½	5 7½	0 ·28	0 8	13·4

It appears from the Report of 1922-23, that in the course of that year there was a reduction of 5*d.* per ton of 2,000 lbs. in the rate for bunker coal to Delagoa Bay and Durban making the rates 13*s.* 6*d.* and 13*s.* 4½*d.* respectively. From these rates it is possible to work out the rates charged per mile for the carriage of one ton of shipment coal in South Africa as compared with those charged in India. The two statements below give the comparisons for a long ton of 2,240 pounds with the exchange at 1*s.* 4*d.* and 1*s.* 6*d.* per rupee respectively. We have given a comparison for the distances mentioned in these statements and also for the distance from the Glencoe colliery to Durban, because the freight charged for this distance was mentioned by the Hon'ble Mr. D. T. Chadwick, C.S.I., C.I.E., I.C.S., when Temporary Member of Council for Commerce and Railways, at the Coal Conference held in Calcutta on August 23rd, 1923.

STATEMENT III.

Charges levied on export coal by the South African Railways compared with the charges which would be levied by the Indian Railways for corresponding distances with the rupee at 1s. 4d.

NOTE.—Rebates have been taken into account throughout.

Miles.	OVER THE SOUTH AFRICAN RAILWAYS.		OVER THE INDIAN RAILWAYS.	
	Rate in force per ton of 2,240 lbs. converted at 1s. 4d. per rupee.	Rate per ton of 2,240 lbs. per mile.	Indian railway charge including coalfield and Calcutta terminals.	Rate per ton per mile.
	Rs A. P.	Annas.	Rs. A. P.	Annas.
175 . . .	4 9 0	·42	3 8 6	·33
241 . . .	4 12 0	·31	4 9 0	·30
276 . . .	4 13 0	·28	5 2 0	·30

STATEMENT IV.

Charges levied on export coal by the South African Railways compared with the charges which would be levied by the Indian Railways for corresponding distances with the rupee at 1s. 6d.

NOTE.—Rebates have been taken into account throughout.

Miles.	OVER THE SOUTH AFRICAN RAILWAYS.		OVER THE INDIAN RAILWAYS.	
	Rate in force per 2,240 lbs. converted at 1s. 6d. per rupee.	Rate per ton of 2,240 lbs. per mile.	Indian railway charge including coalfields and Calcutta terminals.	Rate per ton per mile.
	Rs. A. P.	Annas.	Rs. A. P.	Annas.
175 . . .	4 0 11	·37	3 8 6	·33
241 . . .	4 3 6	·28	4 9 0	·30
276 . . .	4 4 5	·25	5 2 0	·30

It will be seen that, if the exchange is taken at 1s. 4d., it is only for the 276 miles distance that the South African freight for export coal is lower than the Indian, but, at the present rate of 1s. 6d. to the rupee, the South African rate is slightly lower for two of the three distances. But little, if any, Indian coal exported pays freight at a higher rate than Rs. 3-8-6 and, therefore, whether the rate of exchange is taken at 1s. 4d. or at 1s. 6d., the comparison is in favour of Indian coal.

62. The specific request regarding railway charges which was put forward by the coal trade was that either the present rebate should be doubled or the railway charges brought back to their pre-war level. We consider, on the facts stated in the preceding paragraph, that the present railway charges are reasonable and that it is impossible to establish any statistical case for reducing them: but we are of opinion that a question of this kind should be looked at from a wider point of view. As we have pointed out in Chapter III, the two main ways in which collieries can reduce their working costs are an increase in output and the avoidance of stacking. It must, we think, be admitted that railway facilities are not such as to permit the collieries to avail themselves of either of these methods to the fullest possible extent. Although there has been a marked improvement recently in this respect, the railways are not in a position at present, especially during the first half of the year when the demands for wagons all over India are heavy, to meet the wagon requirements of the coal trade to an extent which would make stacking unnecessary. When the railways are unable to meet requirements now during the first half of the year, it follows that they would be even less able to meet them if the output were larger. On this ground alone, we think, we are justified in suggesting an increase in the rebate at present granted, but there are other considerations which fortify us in putting forward such a recommendation. It is hardly necessary for us to point out what a beneficial effect the revival of the export-trade in coal would have on an industry which is only less important than cotton and jute in the industrial economy of India, or what reactions this would have in other directions. The trade in shipment coal may not mean so much to India as it does to South Africa, where the railway rebate is 57 per cent. against only 25 per cent. in India, but exports which in pre-war times averaged about 70 lakhs of rupees in value and at their maximum were valued at about a crore and a half are a contribution to India's foreign trade which is by no means negligible. This is not all. As we have pointed out more than once, a very large proportion of the coal exported from Bengal is carried to Indian ports and therefore anything which can be done to strengthen the position of Indian coal in those markets tends to strengthen the whole industrial organisation of the country.

Possibility of reducing railway charges.

Further it must be recognised that unless the export trade revives there is a danger that some collieries may be compelled to close down. On balance, it does not seem incorrect to hold that the railways, in those circumstances, might lose in freights more than they stand to lose by an increase in the rebate, whilst on the othe hand, if the export trade revives, the freight on the increased exports should more than compensate them for the increased rebate. Again, it is an axiom of railway economics that railway charges should not be more than the traffic can bear, and the present depression in the coal-export trade may justly be urged as a proof that the charges now levied are more than this traffic can bear in present conditions.

For all these reasons we are of opinion that the rebate of 25 per cent. now granted on export coal should be enhanced. We have given the most careful consideration to the question of the extent by which it should be increased and have come to the conclusion that the utmost which we can recommend is an increase in the rebate by 50 per cent., thus making it 37½ per cent. of the railway freight excluding the terminals at the coalfields and the docks instead of 25 per cent. as at present. The rebate for the three centres which we have mentioned would thus be increased from Re. 1 to Re. 1-8 for Jherriah, from Re. 0-12-6 to Re. 1-2-9 for Asansol and from Re. 0-11-3 to Re. 1-0-9 for Raneegunge. The net receipts earned by the railways would be Rs. 2-7-5 from coal booked at the Jherriah rate, Re. 1-14-8 from coal booked at the Asansol rate and Re. 1-11-8 from coal booked at the Raneegunge rate against the pre-war figures of Rs. 2-4-9, Re. 1-11-9 and Re. 1-8-9 respectively. If the terminal of Re. 0-4-0 charged in the coalfields were deducted, the ultimate receipts earned by the railways would be Rs. 2-3-5, Re. 1-10-8 and Re. 1-7-8, and they would thus be slightly less than the pre-war figure. These figures show clearly that it is out of the question to increase the rebate by 100 per cent. as was suggested by several witnesses. If our recommendation is accepted, the comparison between Indian rates and those in force in South Africa on the basis of the rupee at 1*s.* 6*d.* will work out as shown below. The rate for 175 miles, *i.e.*, the rate for the whole of the Jharia coalfields, will be appreciably lower than the rate for the similar distance in South Africa.

STATEMENT V.

Charges levied on export coal by the South African Railways compared with the charges which would be levied under our proposals by the Indian Railways for corresponding distances with the rupee at 1s. 6d.

Miles.	Over the South African Railways.		Over the Indian Railways.	
	Rate in force per ton of 2,240 lbs. converted at 1*s.* 6*d.* per rupee.	Rate per ton of 2,240 lbs.	Indian railway charge including terminals at collieries and Calcutta.	Rate per ton per mile.
	Rs. A. P.	Annas.	Rs. A. P.	Annas.
175 . . .	4 0 11	·37	3 0 6	·28
241 . . .	4 3 6	·28	3 14 3	·26
276 . . .	4 4 5	·25	4 5 9	·25

Mr. Banerjee considers, for reasons separately recorded, that the present rebate should be doubled for coal exported to foreign ports.

It should not be overlooked that the proportion of the total coal-traffic handled by the railways on which the rebate is granted is small. The exact figures for 1924 are not yet available, but we understand that the rebate was given on just under a million and a quarter tons out of a total of about $17\frac{1}{2}$ million tons carried by the two railways, that is on about 7 per cent. We would also mention here that, in connection with our proposals for the establishment of a Grading Board in Chapter IX, we recommend the grant of the rebate in future only on certified coal.

Rebate on bunker coal.

63. We have examined with some care the question of granting a rebate on bunker coal brought down to the docks and to the Howrah and Shalimar depots. In paragraph 6 of our report we have discussed the position of Calcutta as a bunkering port and have pointed out that the statistics of the number of vessels entering and leaving the port and of the tonnage of coal used for bunkers disclose a possibility that ships are now bunkering elsewhere to a somewhat greater extent than formerly. It is obviously desirable that the use of Calcutta as a bunkering port should be encouraged in every way possible and at first sight an easy method of securing the desired object might seem to be by granting a rebate on bunker coal. But before we could recommend a rebate, we should have to be certain of results commensurate with the expense to be thrown on the railway revenues: and we are not satisfied that the rebate would lead to any great increase in bunkering at Calcutta. It is in evidence that Calcutta's strongest competitor as regards bunkering is Colombo. The price of coal trimmed into bunkers was in January Rs. 23 at Colombo against Rs. 17 at Calcutta and if a difference of Rs. 6 is not enough to induce steamers visiting Calcutta to bunker there, a further reduction of Re. 1 by way of rebate could not affect the position materially. The rebate would have to be on all coal bunkered, and, if it were fixed at Re. 1 per ton, it would cost the railways between Rs. 6 and Rs. 7 lakhs per year on the quantity of coal bunkered in Calcutta now: it would be difficult to show that there is any prospect of an increase in the quantity bunkered likely to compensate for this very heavy initial sacrifice. For reasons that will be obvious from our remarks on tramp tonnage in Chapter VIII, we do not consider that a reduction in the price of bunker coal would attract additional tonnage to Calcutta. None the less we expect an increase in the tonnage visiting Calcutta, with a consequent increase in bunkering, and that too without any rebate being granted on bunker coal. Our reason for this is our belief that the adoption of our recommendations will lead to an increase in the amount of coal exported from Calcutta, and that this will have the effect of attracting to the port the class of tramp steamers which before the war came in large numbers to load export coal. No direct measures with the object of making bunkering in Calcutta more attractive are in our opinion necessary. The statements below show that the railway rates on bunker coal are already very low in comparison with those in South Africa.

STATEMENT VI.

Charges levied on bunker coal by the South African Railways compared with the charges which would be levied by the Indian Railways for corresponding distances, with the rupee at 1s. 4d.

Miles.	OVER THE SOUTH AFRICAN RAILWAYS.		OVER THE INDIAN RAILWAYS.	
	Rate in force November 1922 per ton of 2,240 lbs. converted at 1s. 4d. per rupee.	Rate per ton of 2,240 lbs. per mile.	Indian railway charge including coalfield and Calcutta terminals.	Rate per ton per mile.
	Rs. A. P.	Annas.	Rs. A. P.	Annas.
241 . . .	11 4 0	·74	5 14 6	·39
276 . . .	11 5 0	·65	6 10 6	·39

STATEMENT VII.

Charges levied on bunker coal by the South African Railways compared with the charges which would be levied by the Indian Railways for corresponding distances, with the rupee at 1s. 6d.

Miles.	OVER THE SOUTH AFRICAN RAILWAYS.		OVER THE INDIAN RAILWAYS.	
	Rate in force November 1922 per ton of 2,240 lbs. converted at 1s. 6d. per rupee.	Rate per ton of 2,240 lbs. per mile.	Indian railway charge including coalfield and Calcutta terminals.	Rate per ton per mile.
	Rs. A. P.	Annas.	Rs. A. P.	Annas.
241 . . .	10 0 0	·66	5 14 6	·39
276 . . .	10 10 0	·58	6 10 6	·39

NOTE.—We have been unable to ascertain the exact rate charged on South African Railways for bunker coal over a distance of 175 miles, in order to compare it with the Indian rate of Rs. 4-8-6.

64. Complaints were made to us that considerable delays take place in obtaining rebates from the railways but it has to be remembered that all claims to a rebate have to be carefully checked with the bill of lading and other documents and that this takes time. One cause of delay hitherto has been the necessity for correspondence between the East Indian and Bengal Nagpur Railways before rebates could be granted on coal which is despatched by one railway and passes over the other. It has recently been arranged that when this happens the rebate should be paid by the railway which despatches the coal and that the other should be subsequently debited with its share of the charges. Though this arrangement should effect some improvement, we recommend that the procedure for obtaining payment of the rebate should be overhauled and that every effort should be made to insure payment with as little delay as possible. Claims for rebate now have to be submitted quarterly and we consider that their monthly submission should be allowed by the railways.

Delays in granting rebates.

65. We consider that the grant of a rebate on export coal is preferable to that of a reduced rate. The rebate is granted in order to stimulate the export of coal and therefore it should only be given on coal which is actually exported. If a reduced rate were given, there would be no guarantee that all the coal shown in the invoice would actually be shipped and not diverted to other destinations after arrival in Calcutta. For the same reason, we are unable to support the suggestion that the rebate should be granted on the weight shown in the railway invoice instead of on that given in the bill of lading. If coal could all be loaded direct from wagons into steamers, there would be less objection to this proposal, but, as a proportion of it is usually dumped at the docks, there is no certainty that the full amount is actually shipped. The point is not of great importance as we shall quote in Chapter VI figures to show that the difference between the railway figures and those shown in the bill of lading is seldom more than 2 per cent. Mr. Banerjee differs from the rest of us in considering that the rebate should be granted on the figures shown in the bill of lading *plus* 2 per cent. for the presumed shortage on the railway.

Reduced rate *versus* rebate.

66. A proposal was placed before us that a rebate of Rs. 2-6-0 should be granted on coal despatched to Bombay by the all-rail route. The great advantage urged for such a rebate is that if coal had an alternative route to Bombay competition might have the effect of keeping steamer freights down. We are, however, doubtful whether it would have this result, for, as we have pointed out elsewhere, steamer freights are governed by world considerations and would not be affected by the competition of the railway to a particular destination. There is however an advantage which cannot be questioned, that coal transported by the all-rail route would arrive in Bombay in better condition as it would avoid the hand-

Rebate on coal sent to Bombay by the all-rail route.

lings to which it is subjected at the docks in Calcutta and Bombay. In spite of this, with the exception of Mr. Banerjee, we are not able to support this proposal. It has been urged most emphatically by the coal trade that its greatest handicap is the inadequate and irregular supply of wagons in the coalfields: but this handicap would be accentuated if wagons took four times longer than at present to return to the coalfields, as they would if they were despatched to Bombay instead of to the Kidderpore Docks. The natural route for coal intended for Bombay is by sea, *viâ* Kidderpore Docks, and we are of opinion that any rebate given by the railways should be confined to coal sent by this route.

Objections to the proposed rebate have also been raised by the authorities of the Great Indian Peninsula Railway. Under what is known as the telescopic-rate system, the rate per mile on coal carried more than 200 miles diminishes in proportion to the additional distances over which it is carried. From the Bengal coalfields to Bombay is about 1,150 miles and therefore the mileage rate on coal carried to Bombay is low as compared with that on coal carried to Calcutta. In consequence, even when terminals and *ghat* charges are included, the actual earnings of the Great Indian Peninsula Railway amount to only 2·77 pies and 2·71 pies per ton per mile on coal carried to Bombay *viâ* Nagpur and *viâ* Jubbulpore respectively. Against this the statistical cost per mile of hauling one ton of all goods on the Great Indian Peninsula Railway for the year ending March the 31st was 4·57 pies. Even though, for the reasons given elsewhere, the statistical cost per mile of carrying one ton of all goods may be taken as somewhat higher than the cost per mile of carrying one ton of coal, the margin between 4·57 pies and either 2·77 or 2·71 pies is so large as to make it clear that the latter cannot be regarded as paying rates. This furnishes an additional argument against the proposal for a reduction in the rates to Bombay especially as many of the wagons arriving with coal in Bombay would have to be worked back empty to the coalfields at a considerable cost to the Great Indian Peninsula Railway. A further objection raised by the authorities of that railway was that to grant the rebate would be equivalent to encouraging Bengal coal to the detriment of the coal from the collieries on their own system, the development of which is of importance to the railway because their existence results in increased general traffic on that section of their line.

Rebate on coal sent up-country from Indian ports.

67. Another suggestion has been that Indian coal might be assisted by the grant of a rebate or a reduced rate on coal despatched from Indian ports inland. We found that the amount of coal sent up-country from Rangoon, Madras, Bombay and Karachi was so small that the concession would be of no value. Further, it would be quite impossible to make sure that the coal despatched from these ports was Indian and not foreign coal, and, if such a differentiation could not be made, the concession would obviously fail in its purpose.

Prepayment of railway freight on coal.

68. A reversion from the present system of the prepayment of the freight on coal to the system previously in force under which it was booked " to pay " was urged upon us by several witnesses on the ground that the existing practice bears hardly on the smaller and less wealthy collieries. The point does not appear to us of great importance so far as export and bunker coal are concerned. We would, however, point out that the prepayment system was introduced because of the frequent refusals to take delivery of consignments of coal at destination and the losses incurred by the railways when the coal was sold. We would also mention that coal is not the only commodity on which freight has to be prepaid and that this is also the rule for a large range of products the value of which is small in comparison with their bulk. Further the stringency of the present arrangements is considerably relaxed by the practice on the East Indian Railway of allowing about 17 days credit to collieries which are on the weekly bill system. But it is the smaller and less affluent collieries which have not been admitted to that system on which the insistence upon the prepayment of freight presses most hardly. In these circumstances, we recommend that the position should be reviewed by the railways with special reference to the possibility of reverting to the former system of " freight to pay " or, if this is not considered possible, of continuing the present practice subject to the admission of all collieries alike to the weekly bill system subject to such safeguards as may be considered necessary. One point which we feel called upon to stress is the desirability of uniformity in order to reduce the work of the invoicing clerks.

Seasonal rates.

69. The only other point regarding rates to which we need refer was the suggestion that, to relieve the congestion in the coalfields during the first half of the year, the rate for coal should be reduced during the second half with the object of encouraging consumers to build up stocks then. We are only indirectly concerned with this suggestion as the grant of a seasonal rate would not affect the trade in export and bunker coal except by its general effect on the working of the coalfields in the first half of the year. It is difficult to believe that any reduction which is within the range of practical politics would suffice to induce consumers to purchase coal very long before they actually require it for use. The opinion of the coal trade is by no means unanimous in support of the suggestion as will be seen from the oral evidence of the representatives of the Indian Mining Federation. The railways which serve the coalfields state that, when the total movement of all traffic including coal is considered, there is now little difference between the first and second six months of each year and that the margin of carrying capacity available is thus not sufficient to make the grant of a reduced rate during the second half of the year an economic proposition. This is borne out not only by the statistics showing the total tonnage of goods other than coal carried by the East Indian Railway for each half year since 1912, but also by the state-

ment of the Port Commissioners that the variations in the flow of exports into the port are now much less marked than they were formerly, one reason for this being that manganese ore and pig iron, which now bulk largely in the export trade of the port, are shipped irrespective of season. In these circumstances, we have no recommendations to make under this head. Mr. Banerjee considers that seasonal rates should be granted, for the reasons given by him in his separate minute.

CHAPTER VI.

General recommendations regarding railway work.

Indents for wagon supplies.

70. In this chapter we deal with a number of questions of varying degrees of importance regarding the work of railways both in and outside the coalfields which are not covered by the previous two chapters. The first of these questions is that of indents for supplies of wagons. The collieries submit particulars of their daily wagon requirements on a prescribed form: that in use on the East Indian Railway is given as Appendix C to their reply to our questionnaire. At present, in order to obviate the difficulties arising from temporary restrictions on booking by a particular route or to a particular destination, both railways allow a greater number of wagons to be indented for than are actually required. The Bengal Nagpur Railway allows indents up to nine times the extent of the siding accommodation of a colliery, whilst the East Indian Railway permits collieries which have accommodation for three wagons or less to indent up to three times and other collieries to indent up to twice their siding accommodation. A suggestion was put before us that collieries should be allowed to submit alternative indents; these indents would show in order of preference the routes by which it was desired to despatch wagons and if booking by the route shown first on the list were restricted wagons for despatch by the second would be given if available and so on. We find it difficult to understand why this system should be considered preferable to that at present in force, especially on the Bengal Nagpur Railway, on which the permission to indent up to nine times the siding accommodation appears to us to be equivalent to a system of permitting alternative indents to the fullest possible extent, as there are only nine directions in all on that railway by which it is possible for collieries to despatch coal. As the collieries, however, appear to prefer the system of alternative indents we see no objection to its being given a trial, but the number of alternative indents permissible should be limited to three or four. To allow unlimited alternative indents might render the work of checking and classifying them on the East Indian Railway an impossible task.

Sidings.

71. There are three classes of railway sidings in the coalfields: private sidings, assisted sidings and railway sidings. Since 1912, the East Indian Railway has provided 10 private sidings, 206 assisted sidings and 29 railway sidings: these figures include extensions. The corresponding figures for the Bengal Nagpur Railway are not available. The whole cost of the construction of a private siding, including that of the permanent way, is borne by the colliery concerned except

that the connections between the siding and the main line are put in on the terms applicable to assisted sidings. The maintenance of the siding is, as a rule, carried out by the railway, at the cost of the owner, in order to ensure that it is kept up to the standard necessary to ensure the safe movement of rolling stock, but the land on which the siding is laid remains the property of the owner. The cost of assisted sidings, which are the most numerous, is met partly by the colliery owners and partly by the railway; the colliery owners pay the cost of acquiring land and of the earth work, whilst the railway provides the materials and fittings for the permanent way. An assisted siding, which on completion becomes the property of the railway, is constructed mainly for the colliery applying for it, but the railway reserves the right to extend it to another colliery if this is to the advantage of all concerned. Should this be done, the original applicant is indemnified by the refund of a proportion of the cost of the siding, at the expense of the colliery to which the siding is extended. A railway siding is provided when loading accommodation has to be found for a large number of small collieries close together and when it appears advisable to retain the right of varying from time to time the extent of the loading accommodation so as to suit the needs of the collieries situated on the siding. Such sidings are constructed on land acquired by the railway at its own cost and the only charge recovered from the collieries is a monthly charge for each wagon-length allotted to them.

We received numerous complaints of delays not only in dealing with applications for the provision of new sidings or the extension of sidings already in existence, but also in constructing the sidings or the extensions after sanction has been given. One of the main causes of delay, that occasioned by the shortage of second-hand rails, is rapidly disappearing. The other arises from the necessity for careful and detailed examination of all such proposals in order that the railway authorities may satisfy themselves that there will be an increase in traffic commensurate with the expenditure involved and that there are no technical objections; this cannot be entirely removed. We consider, however, that six months should be ample time in which to arrive at a decision whether a siding or an extension should be sanctioned or not and that, when sanction has been given, not more than six months should ordinarily elapse before the work is completed.

We would suggest that any grievance which may be felt when the refusal of a railway to provide a siding is based merely on doubts whether it would prove remunerative would be removed if the applicant were permitted to put in his own siding on the terms which apply to private sidings. If subsequent experience were to show that the traffic passing over the siding gave a fair return, say 6 per cent. on the capital outlay, the railway concerned would then refund the amount which it would have spent if the siding had originally been put in on the terms applicable to

assisted sidings. To avoid possibility of dispute arising in regard to the amount actually spent, this should be determined at the time when the siding is constructed. The extension on similar terms of sidings so as to allow them to take trainloads of 25 or 30 wagons might also be permitted.

Load-line; over-loading and under-loading.

72. We found no point in railway working which gave rise to more criticism than the charges which are levied for over-loading wagons. A few words of explanation will make clear what are the grievances alleged under this head. The margin allowed for over-loading is one ton and for under-loading two tons. This means that, if a wagon has a marked carrying capacity of 18 tons, it does not become liable for over-loading charges unless it is loaded with more than 19 tons. The coal in excess of 19 tons has to be thrown off and subsequently collected either to be used for adjusting the weights of other wagons from the colliery concerned or to be returned to the colliery or to be despatched in a full wagon load as soon as sufficient has accumulated. If the wagon were loaded with less than 18 tons, the actual weight of coal carried would be charged for subject to a minimum of 16 tons, that is, if a wagon were loaded only with 14 tons, 16 tons would be charged *for*. It is important to note that the penalty is not levied unless the number of wagons over-loaded by a colliery exceeds 5 per cent. of the total number of wagons despatched during the month. It is then levied at the rate of Re. 1 per wagon on all the wagons over-loaded in excess of 5 per cent. unless the percentage exceeds 7. If the percentage of over-loaded wagons is more than 7 but less than 10, the penalty is Rs. 3 per wagon, whilst if it is over 10 per cent., the penalty is Rs. 10 per wagon. Thus if a colliery were to despatch 606 wagons in a month and 144 of these were over-loaded, 5 per cent., that is 30 wagons, would be exempt from penalty; the balance 114 wagons, would be liable to a penalty of Rs. 10 each and the total penalty charged would be Rs. 1,140. The extent to which over-loading takes place is evident from the fact that from October 1923 to September 1924 penalties amounting to Rs. 1,47,466-8 were levied by the East Indian Railway on 24,190 wagons, an average of about Rs. 6 per wagon, whilst for the same period Rs. 30,998 were levied on 4,727 wagons on the Bengal Nagpur Railway, an average of about Rs. 6-8 per wagon.

The Coal Traffic Conference of 1912, on whose recommendation the margins allowed for over-loading and under-loading were fixed at one and two tons respectively, thought that the difficulties arising from over-loading would be avoided if the height to which coal might be loaded in each wagon were marked by a load-line painted in white, on the basis of 42 cubic feet of coal to the ton. This suggestion was acted on, but the figures quoted above show that the number of over-loaded wagons is still as high as ever in spite of the heavy penalties which are levied on them. It appears to us that the marking of the load-line has accentuated

rather than diminished the trouble, owing to the tendency of colliery managers and loading contractors, especially the latter, to regard it as an infallible guide which relieves them of further responsibility in the matter. It was never intended to serve this purpose, for the Coal Traffic Conference recognised that the specific gravity of Bengal coal varied between 40 and 45 cubic feet per ton. Experiments recently carried out at certain collieries by the staff of the Chief Mining Engineer show that the cubic capacity of Jharia coal varies from 39 to 44 cubic feet per ton, whilst that of Dishergarh coal runs as high as 48 cubic feet to the ton. It is obvious that, where the cubic capacity of coal is as high as the latter figure, a load-line based on a specific gravity of 42 cubic feet can be of very little use.

The only satisfactory solution of the vexed question of overloading would be found in a type of open wagon which when loaded flush with the top would not be over-loaded, whatever the specific gravity of the coal loaded in it. The feasibility of providing such wagons is a matter which obviously requires very careful technical consideration but we consider that it should be explored. The replacement of existing wagons by wagons of such a type would be a matter of time and Mr. Banerjee is of opinion that, meanwhile, no limit should be placed on the extent to which under-loading should be permitted and that the margin for over-loading should be raised from one ton to two tons as was suggested by Messrs. Bowrey and Ironside at the Coal Traffic Conference of 1912. The rest of us are unable to agree with him. We would endorse the view of the Coal Traffic Conference of 1912 that the question is one which involves the safety of the public. The permanent way and the wagons are constructed to carry a certain maximum load and, if this load is largely exceeded, there is considerable risk that springs will break, that axles will heat and that other defects will appear leading to derailments and accidents. We do not consider it desirable therefore that the margin of one ton at present allowed for over-loading should be increased. The margin of two tons allowed for under-loading also appears to us ample and we see no reason why wagon-capacity should be reduced further than this. An inadequate wagon supply is hardly likely to be remedied when wagons leave the coalfields several tons short of their proper load.

A proposal to reduce over-loading was put forward by the East Indian Railway some years ago. It was that all wagons should be marked with a " Mineral Loading Index Figure " which should be used for the purpose of calculating the height to which coal and other minerals might be loaded, according to their varying specific gravities, in each type of wagon. This index figure would be the floor area of each wagon worked out in square feet and divided into 12 with the result given to five places of decimals. In order to arrive at the height to which each class of coal might be loaded in each type of wagon it would be necessary to multiply the index figure by the specific gravity of the coal to be loaded

and by the quantity of coal which might be loaded in each particular type of wagon as follows:—

Index figure.	Specific gravity of coal.	Quantity of coal which may be loaded.	Height to which coal may be loaded.
·05607	42 cubic feet.	19 tons.	44·74 inches or 3 feet 8¾ inches.

The colliery manager or his representative would know the specific gravity of each class of coal raised at his collieries and would be responsible for marking in chalk on the inside of each wagon the height to which he finds, on calculation, it should be loaded.

The railway companies stated that they would be prepared to assist colliery managers further by issuing a printed pamphlet which would save them all calculations. In this pamphlet there would be a separate page for every specific gravity that could possibly be applicable to steam coal, rubble coal, slack coal, soft coke or hard coke. On each such page would be found against the different index figures the heights to which the required amount of coal should be loaded.

Though the suggestion did not meet with the approval of the coal trade, it was adopted with satisfactory results by at least one group of collieries and its general acceptance would, in our view, have done much to obviate complaints regarding over-loading charges. We can only surmise that the method proposed was considered too complicated to be worked. But, in point of fact, the information in the printed pamphlet which the railways proposed to issue would have saved all calculations on the part of the colliery managers and loading contractors other than that of the specific gravity of their coal which they should be in the best position to ascertain. We, therefore, recommend that the proposal should now be given a fair trial, that all wagons in use and all new wagons should be marked with a mineral loading index figure, and that a load-line should not be marked on new wagons. The existing load-lines need not be painted out but the pamphlet should show, in addition to the information mentioned above, the height above or below the existing load-line to which coal of different specific gravities should be loaded. We find it difficult to believe that colliery managers and loading contractors could not avoid over-loading if they had this information.

Tares of wagons.

73. It was asserted that even when efforts were made to work on the lines proposed by the East Indian Railway, over-loading and under-loading still resulted and that this could only be due to the tares of the wagons supplied being incorrectly marked on them. The railway witnesses stated that the tare is checked whenever the wagon leaves a railway workshop after repairs, but tests carried out at rail-

way collieries show that there is some justification for criticism. We would, therefore, stress the importance of a more careful verification of the tare marked on each wagon whenever it passes through a workshop, and of frequent tests of the weighbridges used at the workshops.

Demurrage charges.

74. Demurrage charges were condemned by some witnesses in language more emphatic than is justified by the figures supplied by the railways. In 1923 demurrage was charged on 3,483 wagons on the East Indian Railway and the amount realised was Rs. 42,187, whilst on the Bengal Nagpur Railway Rs. 7,316 were realised from 331 wagons in the same year. These figures cannot be considered high, but undoubtedly the levy of demurrage charges tends to hold up in colliery-sidings wagons which have been fully loaded and are ready for despatch. For instance, if the loading of some of the wagons on a siding is not completed before the pilot guard arrives, the loading contractor is in a dilemma. He cannot expect that the pilot, which has a large number of colliery sidings to work, will wait indefinitely till loading is finished, but if he allows the wagons to be drawn he loses money. If he hands over to the pilot guard the declaration notes for the loaded wagons only, he is eventually penalised to the extent of the demurrage charges which are incurred on the wagons left behind. If on the contrary he hands over the declaration notes for both the loaded and the partially loaded wagons, he has eventually to repay to his employer the difference in the freight payable on the weight actually loaded and the minimum weight charged by the railways. In these circumstances, it not infrequently happens that the loading contractor refuses to hand over the declaration notes at all and subsequently protects himself by asserting that all the wagons were ready when the pilot guard arrived at the siding but that they were not drawn out for reasons best known to the guard. If the loading contractor ran no risk of being penalised, he could have no objection to handing over to the pilot guard declaration-notes for the wagons which were ready for despatch. We would suggest that the railways should agree as an experiment to suspend the levy of penalties where only one or two wagons are left behind or have to be drawn out and returned next day for completion of loading. The continuance of the concession would depend on the effect which it is found to have on the detention of wagons. The colliery should assist by commencing loading from the entrance to the siding so that the partially loaded wagons would be in the rear and it would be a simple matter to detach them.

Assistance by collieries to railways.

75. The extent to which the efficiency of the railways in the coalfields can be increased by the cordial co-operation of the colliery with the railway staff need hardly be emphasised. Among the recommendations of the Coal Traffic Conference of 1912 to this end was one that collieries should see that wagons are examined

before loading and again before despatch with special reference to the fixing of door pins. Both railways state that very little assistance is given to them in this matter. Neglect of this causes an amount of trouble entirely disproportionate to the work involved in fixing the door pins as, unless the pins are fixed, it is not safe for a wagon to run on the main line and, once a wagon is loaded, it has to be partially unloaded before the door can be properly fastened. We consider, therefore, that the point is of sufficient importance to justify us in drawing the special attention of colliery owners and managers to do it.

A further recommendation which was made by the Coal Traffic Conference in regard to the assistance which would be given by collieries to the railways was that managing agents should instruct their collieries to load coal for upcountry directions on the East Indian Railway in covered wagons whenever they were available provided that the marshalling of wagons permitted it. This would have the double advantage of securing covered wagons for the longer-distance traffic, with a reduced risk of pilferage, and of supplying the receiving railways with the most suitable type of wagons for loading produce in the downward direction. The collieries explain that their failure to comply with the request of the railways on this point is mainly due to the fact that open and covered wagons are not placed in their sidings in groups but are indiscriminately mixed. We are of opinion that open and covered wagons should be separated before being sent out in pilot-loads and that, if this is done, colliery managers and loading contractors should take special care to see that the covered wagons are utilised whenever possible for upcountry traffic.

Co-operation between collieries and railways.

76. In connection with the question of the assistance which could be given by the collieries to the railways, we would here record our opinion that, at many collieries, the work of the loading contractor does not receive the amount of supervision from the colliery managers which its importance in the efficient working of the colliery demands. We cannot but think that many of the complaints in regard to over-loading and under-loading and demurrage charges would disappear were a more careful check over the working of the loading contractor exercised by some one in a position of authority in the colliery. We would, in short, advocate more out-door supervision both by the collieries and the railway staff; by the collieries over the work of the loading contractors and by the railways over that of the pilot guards.

The Coal Traffic Conference of 1912 suggested that the best method of securing co-operation between the collieries and the railways would be the institution of monthly meetings between colliery and railway staff. When this suggestion was made, it was very cordially received by both sides and was immediately acted on but the monthly meetings soon lapsed. In the face of the criticisms of the working of the railways which have been made in

evidence before us and of the view of the railways that they receive little or no assistance from the collieries in matters in regard to which the latter could render appreciable help, we are forced to the conclusion that such meetings could not fail to serve a very useful purpose in enabling both the railways and the collieries to appreciate each other's difficulties. We would, therefore, recommend that they should be revived and we consider that the fullest measure of usefulness will be secured if they are given a somewhat more formal character than previously. We would suggest that the railways should be represented by their Coal Manager and their local district or divisional officer, and the collieries by representatives nominated by the Association of Colliery Managers in India and by the Indian Mine Managers' Association. The latter would be the regular colliery representatives but the meetings should also be open to any colliery manager who wished to bring forward any points in regard to railway working for discussion. Formal minutes of the meetings, over which the Coal Manager of the railway concerned would seem the most suitable person to preside, should be kept. Copies of these should be forwarded to the Agent of the railway through the head of the department concerned and also to the Indian Mining Association and to the Indian Mining Federation. It would be desirable that the local district officer of the railway should be given at least a fortnight's notice of any point to be brought forward at a meeting in order to enable him to make a preliminary investigation into it. Meetings held on these lines should, in our view, be of great benefit both to the railways and the collieries.

Issue of more than one railway receipt for rakes and half rakes.

77. Where wagons are loaded in rakes and half rakes to one destination but are intended for different consumers, a consignor would often like to get more than one railway receipt in order to facilitate his business transactions. We are of opinion that this should be allowed by the railways, as it will tend to encourage the loading of rakes and half rakes and the quicker turnround of wagons. The only objection which has been urged to this proposal is that it involves additional clerical work but this is not, in our opinion, sufficient to counterbalance the advantage which would result both to the coal trade and the railways from the quicker turnround of wagons.

Splitting up of rakes and half rakes among different collieries.

78. We consider that there is no objection to rakes and half rakes of wagons being split up among different collieries even though they are not under the same management so long as the collieries are served by the same depot-station.

Pilferage.

79. Amongst the minor handicaps to which Indian coal is subjected in competing with other coal, is the loss by pilferage on the railways. Estimates regarding the extent to which this occurs varied from 2 to 6 per cent. These can be checked by actual figures as the Chief Mining Engineer to the Railway Board informs us that

the loss on 324,648 tons despatched by him to the docks between April and October 1924 worked out at 1·55 per cent. and that reweighment-tests on the North Western Railway carried out between January and July 1924 showed a loss of 28,730 tons, that is of 3·78 per cent. We consider that two per cent. may safely be taken as the average loss in transit between the collieries and Calcutta. This cannot be considered heavy, but it is obviously desirable that every effort should be made to reduce it to vanishing point. Beyond suggesting that special attention should be paid to the safe custody of coal in the depots at Howrah and Shalimar we need not, however, make any specific recommendation on the point as the recent improvements in the watch and ward staff on both railways show that they are fully alive to its importance. In his separate minute, Mr. Banerjee mentions in detail the steps which he considers should be taken in this respect.

Supply of open wagons to collieries.

80. We now come to what we regard as one of the most important recommendations in our report. In competing with other coals Indian coal suffers from no greater handicap than that which is imposed on it by the amount of slack, dust and shale which it contains. At all the ports that we visited we were very greatly impressed by the excellent condition of some of the coals received from other countries and we cannot too strongly emphasise that, if Indian coal is to recover its old markets, it must be properly cleaned and screened. Cleaning and screening are independent operations serving different purposes. The former aims at the removal of all matter other than coal of the required quality, such as shale, coarse-grained or water-marked coal, etc.; screening on the other hand is for the purpose of getting rid of dust and smalls. Washing is one method of eliminating impurities, and its use for Natal coal led several witnesses in overseas ports to suggest that Indian coal also ought to be washed. We have inquired why this is not done and have learnt that with Indian coal the method has proved useless. Shale cannot be removed from Indian coal by washing, partly because the specific gravity of the shale and the coal is very similar and partly because they are so intermixed as to be inseparable unless the coal is broken up. For this reason Indian coal has to be cleaned by hand-picking. To enable this operation to be performed satisfactorily the coal should pass along a picking belt, but it is not economical to use a picking belt when the coal has to be stacked extensively, and the impurities have then to be picked out from the coal in the stack or in the wagon. We have already pointed out that stacking is at present very prevalent in Indian collieries, and for this reason the coal is often not cleaned properly. The remedy is an improved wagon supply. It should be mentioned however that Dishergarh Poniati coal, being very homogeneous, suffers less from this cause than other coals: in fact it requires so little cleaning that picking belts are not necessary. The neces-

sity for stacking is the chief reason also for the comparative failure of the coal trade to screen the coal. It is useless to remove dust and smalls from coal which is going to be stacked; for more dust and more smalls are formed by disintegration. On the other hand, it is very difficult to arrange for coal to be screened thoroughly at the time of loading from stack, because hand-loading is then necessary and to screen by hand means great delay and is almost impossible when dealing with large quantities. Screening cannot be carried out economically unless the coal is passed over a screen into wagons, when first raised. Therefore for both cleaning and screening, the provision of a regular supply of open wagons is essential.

A screening plant would be of no use unless it included mechanical appliances—with or without picking belts—which would permit coal to be loaded direct into the wagons. The cost of mechanical appliances for loading coal into covered wagons is prohibitive and the efficiency of any plant so far devised is more than doubtful. It is in evidence that many collieries which installed mechanical appliances have had to discard them or are unable to use them to the best advantage because they have been unable to obtain a regular supply of open wagons.

We are convinced that only by the use of mechanical appliances, power driven or otherwise, can the despatch of coal in the best condition be ensured: and we consider proper cleaning and screening to be so vital a factor in the recovery of the export-trade that we cannot too strongly recommend the supply of none but open wagons to collieries which instal such appliances. We need hardly say that we would not confine the supply of open wagons to collieries which load coal for export. It is obvious that these collieries vary from time to time and that no firm will incur the expense of installing the appliances unless it is certain that these can always be used. The East Indian Railway informed us that orders are in force on their system for open wagons to be supplied to collieries which have mechanical loading appliances and that the matter is watched very closely. There was, however, some conflict of evidence as to the extent to which the orders were being carried out in practice and we would recommend that a careful investigation should be made on this point. The Bengal Nagpur Railway objected that the supply of open wagons to collieries using mechanical loading appliances would result in a considerable loss of capacity because of the time that would be lost in sorting out the wagons and, sometimes, in keeping them on hand until the pilots serving the collieries were ready to go out with them. We would point out that the work involved in sorting and marshalling wagons on the Bengal Nagpur Railway, as on other railways, has been very greatly reduced since the introduction of the wagon pool. But even if the objection raised by the Bengal Nagpur Railway were stronger than we consider it, we should have no hesitation, for the reasons already given,

in recommending the supply on that system of open wagons to collieries which have mechanical loading appliances.

We would not go so far as to recommend that open wagons should be supplied for all coal traffic to the docks, though we hope that, if the recommendation we have made above is accepted, this will come about naturally from the fact that the collieries which despatch coal for export will be led to instal mechanical loading appliances. We consider it desirable that the aim should be to provide only open wagons for dock traffic, so that by the time the Port Commissioners are in a position to instal mechanical unloading appliances for dealing with open wagons, the system of supplying only such wagons for dock traffic will have already been established.

Coal Transportation Officer.

81. A question to which we have devoted considerable attention is what, if any, preference should be given by railways in the matter of wagon-supply for export coal. The control of wagon-supplies dates from January 1917. Prior to that date, preference in the matter of wagon-supply was, by agreement between the railways and the coal-trade, usually given to loco. coal, coal required by works of public utility (such as gas, electric-supply and tramway companies and water works) and coal transported in rakes; the railways could, however, also sanction special supplies of wagons when they thought it desirable. In 1917, the Government of India, in view of the increasing demand for coal both for military purposes and for the industrial requirements of the country, appointed a Committee so to regulate distribution as to ensure that the demands of military and naval authorities were met in their entirety and those of ordinary commercial consumers as fully and economically as circumstances permitted. Under this system, requisition and distribution were not sufficiently coordinated and delays frequently resulted from the references which were necessary between the Committee and the Chief Mining Engineer to the Railway Board, whose headquarters are in Calcutta, on the one hand and the Government of India and the Railway Board on the other. The Committee was, therefore, replaced in October 1917 by a single officer, the Coal Controller. This appointment continued until the end of April 1919, when it was abolished and the work was taken over by the Deputy Coal Controller under the designation of Coal Transportation Officer to the Railway Board. It was hoped that it would be possible gradually to do away with the control of wagon supplies, but this hope has not yet been realised. Since the end of 1922, the Coal Transportation Officer has had the assistance of an Advisory Committee of which the Director of Industries, Bengal, is the Chairman.

It is unnecessary here to describe the various schemes of wagon distribution which have been devised from time to time in order to hold the balance as fairly as possible between consumers and producers. The evidence received shows a general agreement both

among the coal-trade and among consumers that, whatever the justification for the appointment of the Coal Transportation Officer in the abnormal conditions arising out of the war, its continuance, at any rate in its present form, is undesirable. It is not to be expected that any system which could be devised for the control of wagon distribution would give satisfaction to producers and consumers alike, for the very existence of such a system is evidence that there are not enough wagons for all requirements, or in other words, is evidence of a serious defect in railway facilities. There is, we find, a feeling that, so long as the control over wagon supplies is exercised by an officer who is responsible not to the railways concerned but to the Railway Board, so long will the railways be without incentive to remedy the deficiencies, and that the continuance of the Coal Transportation Officer's appointment tends to stereotype an unsatisfactory state of affairs. It is this feeling that is at the bottom of the desire that the post should be abolished, and that there should be a reversion to the system in force prior to 1917 when the railways concerned were able to manage without his assistance.

As we have pointed out in Chapter IV, the general wagon position is now more satisfactory than it has been for some years past. Both in that chapter and in this we have made various recommendations which aim at further improvement. The time has, therefore, come, in our view, when the Coal Transportation Officer can safely be dispensed with and when preference in the matter of wagon supplies can be restricted within very small limits. We consider that it should be confined to loco. coal, including coal for inland river navigation companies and for ocean-going steamers from Calcutta under mail contracts with Government, to coal for works of public utility, and to certified coal for export. Our reasons for recommending that the first two of these three classes should be given preferential treatment need no explanation. As regards export coal, we would point out that the prompt and regular arrival of coal at the docks is an absolutely essential factor in the recovery of overseas markets. It enables the maximum amount of coal to be loaded direct from wagon to ship and thus by avoiding the additional handling necessitated by dumping goes far to secure that the coal leaves India in the best possible condition. What is equally important, it prevents ships from incurring demurrage charges or, as has been known to occur, from leaving with only a part cargo: this is a point which is of the greatest interest to consumers at the receiving end who are far more likely to place orders for Indian coal if they are certain that there will be no delays or difficulties in shipping it. Our reasons for recommending that preferential treatment should be granted only to certified coal will be found in Chapter IX.

If preference in the matter of wagon supplies were restricted within the limits that we suggest, the balance of the wagons available would be distributed to the collieries on a proportionate basis.

Such a basis is now in existence but is inoperative for part of the year owing to the number of special supplies authorised.

Under this system, each colliery is allotted "a daily wagon basis". This is obtained by working out the average number of wagons the colliery would have required daily in order to load its average monthly raisings of coal in the last quarter but one *plus* the average amount of coal in stock during that quarter. The figures of the last quarter but one are taken because of the impossibility of getting the figures for the last quarter in time to work out the new basis for the colliery. When the number of wagons available for public supplies on any particular day is unequal to the demand, the collieries are allotted a percentage of their daily wagon basis which thus represents the relation borne by the number of wagons available to the total of the daily wagon bases of all the collieries indenting. This basis appears suitable, but the matter is one for agreement between the coal-trade and the railways.

We have considered the question whether the preferential wagon supplies allotted to collieries under our recommendations should be treated as cumulative, that is, whether the number of wagons received by a colliery in excess of the number which it would have obtained if it were not despatching loco coal, coal for works of public utility, or certified export coal, should be deducted from the supplies subsequently given to it. This system has been tried, but did not prove workable and we are therefore unable to recommend its adoption.

If our recommendations under this head are accepted, the retention of the Coal Transportation Officer with his present large staff will no longer be necessary. The supply of wagons for the movement of loco coal and for coal for works of public utility would be automatic. The only work of the Coal Transportation Officer which would be left would therefore be the issue of instructions for the preferential treatment of certified export coal. This would not in itself provide sufficient work for a whole-time officer, but we consider that such an officer is required generally to facilitate the movement of export coal. He could render valuable service in looking after the marshalling, despatch and transit of export coal and especially in arranging with shippers that they should, as far as possible, load their coal in full train-loads at one colliery or at collieries on pilot-sections served by the same depot station, a point to which we have drawn special attention in Chapter IV. This may not always be practicable, but if the matter were specially brought to the notice of shippers there is reason to believe that much could be done in this direction. A further way in which a whole-time officer could render assistance would be in watching the arrival of wagons at the docks and in seeing that they are placed properly and turned round quickly. In short, he could be a most useful link not only between the coal-trade and the port on the one hand and the two railways on the other, but also between the

two railways themselves. We therefore recommend that the Coal Transportation Officer should be replaced as soon as possible by an officer of this character, who would be directly responsible to the railways and who, with the very small staff that he would require, would be paid by them. His headquarters would, of course, be in Calcutta.

In order to permit of the preferential treatment which we recommend in the matter of wagon supplies, it would be necessary for the East Indian and the Bengal Nagpur Railways to continue to be exempted from the provisions of section 42 (*2*) of the Railway Act. Unless there is any legal objection to such a course, a point on which we are not competent to express an opinion, we would urge that the position should be regularised by a formal notification under Section 147 of the Railways Act exempting the Railways concerned from section 42 (*2*). Mr. Banerjee dissents from this view and considers that preferential treatment should be a matter for arrangement between the railways concerned and the coal trade.

We are of opinion that before any change is made, on the lines that we suggest, in the present system of allotting special wagon supplies for the carriage of coal for industrial consumers in India that are in need of assistance, at least six months' notice should be given of the proposed change in order that both the coal trade and the consumers may have sufficient time to make preparations to adapt themselves to it. This notice should be given not later than the end of the first half of the year, when conditions in regard to wagon-supply normally begin to become easier, and as much earlier as possible. It should, we think, be made clear that in no circumstances will the system of special or emergency supplies be revived and if consumers refrain from making themselves secure in the matter of supplies during that part of the year when the wagon position renders it easy for them to do so, whether through unwillingness to lock up capital in the purchase of coal before it is actually required or because they have insufficient stacking accommodation, they will do so at their own risk. We make this recommendation as it is obvious that if exceptions are once permitted this can only lead to the revival of the present system in its full working.

We would add that when the new railway collieries in the Bokaro Ramgarh, Karanpura and Talchar coalfields reach their full development, it should greatly ease the wagon position in the Raniganj and Jharia fields, inasmuch as the demand for wagons for the transport of loco coal in the latter fields would be much reduced. This assumes that the total rolling stock increases *pari passu* with the extension of open lines and therefore that at least as many wagons are available for those fields as at present, a larger proportion of the supply would thus be available for the carriage of coal for industrial purposes.

CHAPTER VII.

The Working of the Calcutta Docks and Coal Depots.

Handling of shipment and bunker coal.

82. To the Port Commissioners of Calcutta, as to the railways, we are indebted for a very full and exhaustive reply to the special questionnaire issued to them. We attach as Appendix XVI to our report a statement showing the tonnage of coal which passed through the Port of Calcutta in each year since 1912. The figures in this statement have been furnished by the Port Commissioners with the exception of those for bunker coal loaded "overside" prior to 1917 which are not available from the Port Commissioners' records and for which, therefore, the figures for bunker coal supplied by the Director General of Commercial Intelligence have been utilised. It will be seen that the figures for both cargo and bunker coal are given under three heads, "Docks," "Overside" and "Garden Reach Depot" representing the three channels through which coal leaves Calcutta by sea. The term "Docks" needs no explanation. "Overside" coal is that which is shipped either as cargo or as bunkers from the coal depots at Howrah and Shalimar on the opposite side of the Hooghly to that on which the docks are situated. The Garden Reach depot, although the property of the Port Commissioners and in reality part of their dock system, is in practice used exclusively by Messrs. Mackinnon, Mackenzie & Co. This firm formerly shipped coal from the private jetty known as the Brace Bridge Hall Depot: when this was acquired by the Port Commissioners it was replaced by the present one a little further up stream at Garden Reach.

Appendix XVI shows that almost all the cargo coal which leaves Calcutta is shipped at the docks and that the position is almost exactly reversed in regard to bunker coal: little bunkering is now done at the docks, although prior to the war well over 200,000 tons were annually bunkered there. At present two-thirds of the coal passing through the Garden Reach depot is exported, the remainder being used for bunkering. We propose to consider the facilities at the docks and at the coal depots separately. The Garden Reach depot is to all intents and purposes a private one and we have therefore no recommendations to make in regard to it. We attach a plan showing the position of all the coal berths and depots to which we refer.

The coal loading berths and the Beckett's plant.

83. The coal loading berths at the Kidderpore Docks are in Dock No. 2. There are ten of these in all, of which Nos. 19 and 20 are fitted with mechanical loading appliances of the type known as Beckett's plant. At the remaining eight, Nos. 15 to 18,

22, 23, 28 and the "New Horse Jetty" (shown as No. 21 in the plan), which are in blocks of four on each side of the dock, coal is loaded by hand, that is in baskets carried by coolies either from wagons or from dumps. There is sufficient accommodation at all the berths to permit an aggregate of 80,000 to 100,000 tons of coal to be dumped at any one time.

Of the two Beckett's plants, the one at No. 20 berth was installed in 1902, and the other only last year. The two plants were in use at the same time only for a few months, for soon after the new plant commenced work, the other had to be overhauled and this work has not yet been completed. It is anticipated that both plants will be working in May or June of this year. The older plant consists of four cranes with a maximum lift of 28 feet above the quay and a maximum radius of 37 feet: a fifth crane is about to be added. The cost in 1902 was Rs. 1,35,100, of which Rs. 45,900 was expended on a power house. The cost of the newer plant which consists of five cranes with a maximum lift of 63 feet and a maximum radius of 53 feet was Rs. 3,87,040. An electric-driven hydraulic power station to operate both plants has recently been provided at a cost of Rs. 1,87,300. The cost of the quay wall, skip trench, railway lines and other accessories at each berth was approximately Rs. 4,60,000. The total cost of the two plants was thus approximately Rs. 16,29,440. A brief description of the Beckett's plant will show in what respects it falls short of the requirements of an up-to-date coal loading port. Each plant has four or five hydraulic cranes along the quayside. These lift the coal in cylindrical skips each holding five and a half tons. At a little distance from the cranes and parallel to the quay front, runs a trench with vertical walls deep enough to hold a skip. On either side of the trench there are two sets of tracks. The outer tracks are for the wagons which bring the coal: and the inner tracks carry hoppers which transfer the coal from the wagons into the skips. The hoppers are partly loaded with coal from the wagons by gravity but the work has to be finished by coolies. When a hopper has been loaded, it is moved along the track into a position convenient for discharging its contents into a skip which is awaiting a load at the bottom of the trench. Discharge is effected by opening a door at the bottom of the hopper and allowing the coal to run into the skip by gravity. When the skip is full, it is lifted by the crane and closes, in passing, the doors of the hoppers, thus enabling the loading of coal into the hoppers to continue. The driver of the crane lowers the skip into the hold of the vessel and, when it nears the bottom, operates two side ropes which lift the shell of the skip away from its base, so that the coal runs out into the hold.

Mechanical loading appliances in South Africa.

84. The important point in regard to the Beckett's plant is that it is not a completely mechanical plant and that the coal is liable to breakage when it is shovelled by coolies into the hoppers. It may, therefore, be of interest to compare it

with the plant in use at Durban and Delagoa Bay. At the Point side of the port at Durban, coal is shipped by baskets which are lifted either by hand from railway trucks or by ships' winches from punts which have been loaded by one of the appliances across the channel at the Bluff or by buckets lifted by electric or hydraulic cranes. At the Bluff, where most of the cargo coal is loaded, the two systems in operation are the transporter system and the belt conveyor system. Under the transporter system, the coal trucks are lifted on a dumper and the contents are tipped into an apron and thence into 6-ton tubs. These are subsequently carried by the transporter over the hatch or bunker when the bottoms of the tubs are opened and the coal falls into the ship. The rate of loading is 250 tons per hour as against the maximum of about 189 tons with the Beckett's plant. Under the belt conveyor system, railway trucks are lifted on a dumper and the contents tipped into an apron which leads the coal on to a belt running parallel with the ship. At a point opposite the hatch or bunker the coal is transferred to another belt running at right angles to the ship from which it falls into the hatch or bunker. The maximum rate of loading under this system is 400 tons per hour. It is interesting to note that a similar plant by the same maker was erected in 1915 at the Kidderpore docks but has been discarded owing to the difficulty of getting sufficient end-tipping wagons and to complaints from the coal trade that breakage was excessive. At Delagoa Bay the trucks are lifted and discharged into an apron or shoot from which the coal is conveyed direct into the ship's hold. It is claimed that this system causes less breakage than those adopted at Durban, but it has the disadvantage that the ship has to be moved whenever a fresh hatch is to be loaded, whereas at Durban both machines can be moved from one hatch to another.

Working of coal traffic at the docks.

85. All wagons intended for the Kidderpore docks are taken over from the railways at one or other of the two dock junctions. Those coming from the East Indian Railway *viâ* the Eastern Bengal Railway, which form by far the larger proportion, are taken over at the East Dock Junction, and those from the Bengal Nagpur Railway *viâ* the wagon ferry are taken over at the West Dock Junction. The immediate head of the organisation for dealing with them is the General Yard Superintendent under whom are yard foremen whose duty it is to see that wagons are placed alongside vessels without delay. On arrival at the dock junctions, the wagons are chalk-marked by yard clerks in accordance with the shippers' orders, marshalled by the yard foremen and despatched to the berths chalk-marked on them. For the working of the coal berths there is in addition a Coal Superintendent with a staff of inspectors whose special duty it is to ensure the rapid placing, release and removal of coal wagons. The Coal Superintendent is in direct touch with shippers of coal.

A careful check on the movement of wagons is kept by the General Yard Superintendent who personally inspects the coal-

yards each morning and throughout the day keeps in constant touch with them by telephone. His supervision is exercised by daily station reports received from the yard masters at the junctions, and he discusses matters each morning with the Coal Superintendent. The latter, who exercises similar supervision over the shipping operations, prepares for him each day a note on the basis of the station reports received from the yard masters and a statement of wagons received, released and still on hand at each coal berth for the information of the Traffic Manager and of the Chairman of the Port Commissioners. That this check works satisfactorily is shown by the fact that the average turn-round of all wagons in the docks including those loaded with coal, that is the time taken from the arrival of a wagon at a dock junction until it is returned there with or without a load, is 39 hours, while the average figure of turn-round for East Indian Railway coal wagons alone is about 28 hours. Wagons are allowed by the railways to remain on the Port Commissioners' premises for 48 hours free of charge or demurrage, but only in two months since the system was introduced in March, 1922, have any demurrage charges been paid.

Additional facilities for coal traffic provided or in contemplation.

86. Whilst we consider that given proper co-ordination between all concerned the figure of 28 hours which we have quoted in the preceding paragraph is capable of substantial improvement, we are of opinion that it is in itself sufficient evidence that delays which occur in shipping coal at the docks are mainly due not to the slowness with which coal wagons are dealt with there, but, as the Port Commissioners contend, to the irregularity with which wagons intended for a particular steamer arrive. Whether the figure would remain as satisfactory if the coal trade were to expand to anything like its pre-war volume is a point for consideration. The following table shows the number of wagons arriving at the docks loaded with coal and with cargo other than coal during the last twelve years.

Years.	Coal.	Cargo other than coal.	Total.
1913	185,085	57,358	242,243
1914	176,400	54,444	230,844
1915	117,163	57,093	174,256
1916	108,533	56,376	164,909
1917	72,731	45,646	118,377
1918	69,168	44,664	113,832
1919	121,081	46,562	167,643
1920	167,934	47,505	215,439
1921	129,993	48,649	178,642
1922	69,118	65,613	134,731
1923	71,838	83,205	155,043
1924	97,655	92,321	189,976

This statement shows that the total number of wagons arriving at the docks is still considerably smaller than it was in the pre-war period and that the falling off has been almost entirely due to the decrease in the coal traffic, the number of wagons received with goods other than coal having gone up markedly in recent years. In the pre-war period coal wagons were over three times as numerous as those received with other goods: now they are barely half the total number of wagons received.

Although the number of coal wagons arriving at the docks has fallen so greatly, the Port Commissioners have recently improved the facilities for dealing with them and further improvements are in contemplation. An additional shipping line has been put in at the coal berths on the west of the docks at which hand-labour is used and this now enables wagons to be placed at any berth without disturbing the work going on at other berths. The total cost of this improvement was about Rs. $1\frac{1}{4}$ lakhs. The shipment lines behind the mechanical loading berths have also been remodelled. A further improvement of a general character has been the alteration of the arrangements at East Dock Junction so as to permit the reception, breaking up and despatch of wagons to take place simultaneously. Further improvements in contemplation at an estimated cost of Rs. $5\frac{1}{2}$ lakhs include the provision of additional lines at East Dock Junction which will facilitate the breaking up of coal-trains and also afford a direct route to the Garden Reach depot from both the East and the West Dock Junctions. They also include the provision of stabling accommodation for 218 coal wagons at the berths at which coal is loaded by hand, as well as of additional accommodation at the mechanical-loading berths for 193 wagons carrying coal or manganese ore.

We consider that, if the facilities for the movement of coal traffic in the docks are improved to the extent contemplated, they should prove sufficient to deal adequately not only with the existing coal traffic but also with any extension of it which can be regarded as probable in the near future. We need hardly state that in our opinion it is most essential to continue the careful check which is at present kept on the turn-round of wagons between the Dock Junctions and the coal-loading berths. The only other suggestion that we would make under this head is one to ensure co-ordination between the port authorities and the railways. In the previous chapter we have proposed that the Coal Transportation Officer should be replaced by a railway officer who would act as a link between the coal trade and the port on the one hand and the two railways on the other. But in addition we consider it most desirable that the railway officers in the coalfields should have a thorough acquaintance with the working of the port and that the officers in charge of the coal traffic at the port should have a thorough acquaintance with the working of the railways in and from the coalfields. We would, therefore, suggest that the railway officers concerned should from time to time be placed on special duty for short periods in the port to examine the working

of the coal traffic there in conjunction with the Port Trust staff and that, similarly, the corresponding officers of the Port Trust staff should be placed on special duty in the coalfields. This process should be repeated when any new officer is appointed by the Railways or the Port Commissioners to work specially connected with coal.

Installation of further mechanical loading appliances.

87. The result of our investigation into the working of the port has shown that the Port Commissioners cannot reasonably be expected to do more than they have done or contemplate doing in regard to the provision of additional facilities for the quick turn-round of wagons. We proceed to consider what assistance can be given by them in ensuring the export of Indian coal in the best possible condition. For the unsatisfactory condition in which Indian coal is exported responsibility rests with the collieries, with the railways and with the port authorities, though only a small share of it can be laid at the door of the last of these. Responsibility rests with the collieries because insufficient attention is paid to the careful loading of picked coal into wagons. We fear that more importance is attached by the staff of many collieries to the quantity of coal despatched than to its quality. Responsibility rests with the railways because, as we have already explained, the inadequacy of the wagon supply entails stacking, which means deterioration, and the lack of open wagons prevents the use of mechanical loading plant and consequently hampers screening. Responsibility rests with the Port Commissioners in so far as their methods of loading coal cause avoidable breakage. The two questions which arise in regard to breakage at the port are the extent to which it can be reduced in existing conditions and the extent to which it can be prevented further by the provision of additional mechanical loading appliances. Breakage is more marked when coal is loaded by hand than when it is loaded by the Beckett's plant, especially at the commencement of loading when the coal is thrown some 30 or 40 feet to the bottom of the ship's hold. It would thus seem that an easy way of avoiding breakage to a large extent would be to load all coal by the Beckett's plant. Up to the present, as we have explained, practically only one of the two plants has been working and of late it has been used for manganese ore in preference to coal. This has been considered desirable in the general interests of the coal trade because otherwise a labour force could not have been maintained as a reserve against a sudden expansion of coal exports. We understand that when both plants are at work, as probably they will be in May or June, one of them is to be used exclusively for coal and the other mainly, if not entirely, for manganese ore. We realise that the question of the best use of the Beckett's plants is one which must be decided by the Port Commissioners in the general interests of the port, but the condition in which Indian coal is exported is of such vital importance to the coal industry that, where shippers ask that their coal should be loaded by this

plant, we strongly recommend every effort being made to comply with their request. It is of special importance that the first part of each cargo should be so loaded as it is this part which suffers most severely from the conditions imposed by hand-loading. We would, therefore, suggest that as a general rule, to be departed from only in exceptional circumstances, the first part of each cargo of coal should be loaded by the Beckett's plant. We would here mention the allegation made by some witnesses that avoidable breakage is incurred even when coal is loaded by the Beckett's plant owing to the failure to lower the steel rope to its fullest possible extent. We do not consider on the evidence received that this allegation has been established but it is a matter to which special attention should be paid.

As regards rapidity of loading, the Port Commissioners state that, if the railways can arrange for the prompt arrival and regular supply of wagons, 1,500 tons can be loaded daily at each of the berths at which coal is loaded by hand, and that 3,000 tons of coal, at a conservative estimate, can be loaded in a day by the Beckett's plant. When allowance has been made for holidays, inclement weather and delays due to the ship, over four million tons could be loaded annually even if only one Beckett's plant were used for loading coal.

There is, therefore, no room for complaint as regards the quantity which can be loaded: but, as regards condition, the methods in use admit of improvement. The Beckett's plant, though a great advance on hand-loading, is only a semi-mechanical plant and therefore leaves much to be desired when compared with the up-to-date loading appliances in use in such ports as Durban and Delagoa Bay. Breakage at the port can only be obviated to the fullest possible extent by the use of some such appliances as have been installed in South Africa. The present state of the coal export trade is not such as to justify us in recommending the immediate installation of such appliances. There is, however, no reason why the question of the best type of mechanical loading appliances most suitable to Calcutta should not be investigated at once in order that the Port Commissioners may be ready to instal them as soon as the export trade shows signs of improvement. In the interesting note on the mechanical handling of coal submitted to us by the Port Commissioners, various types of mechanical loading appliances have been discussed with special reference to their suitability to Calcutta. We are not competent to decide which of these types would prove the most satisfactory. We therefore recommend that the question should be investigated at an early date by an expert committee, the most suitable constitution of which would be an engineering officer of the Port Trust, a representative of the coal trade with engineering experience and a railway officer with experience of the coalfields. This committee should, in our view, be called on to report on the best type of mechanical loading plant adapted to all types of open wagons only, for it will be gathered from our recommendations in Chapter VI that we do not regard any other type of

wagon as suitable for the export trade. Another point that the committee should investigate is the possibility of using shoots for coal loaded by hand in order to reduce as far as possible the breakage which results from the fall into the ship's hold. Experiments were made with shoots as far back as 1910 but they were not on an extensive scale and it appears to us desirable that the matter should again be carefully examined.

Dumping at the docks and opening of steamer berths.

88. As we have said, there is sufficient space at all the coal berths to permit the dumping of 80,000 to 100,000 tons of coal. Prior to 1924 a charge of 3 annas per ton was levied on all coal dumped at the docks pending the arrival of the ship for which it was intended. This charge was suspended temporarily for a year from January the 1st, 1924, and the suspension has since been continued "sine die." The coal trade considers it essential to the quick turn-round of wagons and the speedy loading of ships that the dumping of 3,000 to 5,000 tons at each berth should be permitted free of charge. This question is closely bound up with that of the opening of steamer berths. The usual practice at present is for the Port Commissioners to give six days' notice to the railways of the opening of a steamer berth though, if a longer period is specially asked for, it is given up to a maximum of 10 days. If, for example, a steamer is expected to commence loading on the 15th of the month, the berth will be declared open on the 9th, that is, any cargo including coal intended for that steamer will be received by the Port Commissioners on or after the 9th and stored free of charge on their premises. The coal trade contends that six days' notice is insufficient as information of the opening of the berth has to be sent to the coalfields, and wagons have to be allotted, loaded, marshalled and despatched, with the result that they do not arrive in advance of the date fixed for the commencement of the loading. The measures that we have suggested in Chapters IV and VI to ensure more rapid movement of coal traffic from the collieries to the docks should produce a marked improvement in this respect, but we consider it desirable that the Port Commissioners should not wait until a berth is actually declared open before informing the railways of the fact but should give them a few days' notice beforehand. We recognise that this will not be practicable in many cases owing to uncertainty as to the movements of the steamers expected but whenever it is possible it should be done. The Port Commissioners do not desire that the coal should begin to arrive at the docks more than two or three days before the steamer is ready to commence loading, and this seems to us a reasonable position. Although exporters of coal are insistent on the necessity for dumping, it is as much to their interests as to those of the Port Commissioners that dumping should be avoided as far as possible. To the Port Commissioners, dumping means extra expense on the labour required in consequence of the additional handling and the longer lead. To the coal trade it means deterioration in condition owing to the additional handling and

may also mean loss from pilferage and waste. It is, therefore, most desirable that coal should be loaded from wagons in preference to being loaded from dumps. Dumping would no longer be necessary if a steady and adequate flow of wagons from the collieries to the docks could be secured and it is the uncertainty on this point which has led to the insistence by the coal trade on dumping in spite of its obvious disadvantages. It has been stated in evidence that, since the Port Commissioners have suspended the dumping charges, they have actively discouraged dumping, but we are unable to discover any substantial ground for this contention. For the reasons that we have given above, the Port Commissioners not unnaturally prefer to load coal from wagons whenever this is possible. But no facts have been placed before us which lend colour to the view that this preference has ever occasioned delay in opening stations or in loading steamers. In the present conditions, dumping must be regarded as an inevitable but regrettable necessity. The Port Commissioners, recognising this, do not impose any limit on the extent to which it is permissible, nor, we understand, have they any intention at present of imposing any such limit. The present procedure appears to us to leave no real ground for dissatisfaction on the part of the coal trade and we do not consider that there is any necessity to modify it. Should the Port Commissioners consider it desirable at any time to impose a limit on the amount of dumping, we are of opinion that this should be fixed at not less than 40 per cent. of the cargo intended for a particular ship.

Possibility of reducing port charges.

89. We now pass on to a consideration of the second of the two main directions in which the Port Commissioners can assist the coal trade: which is by the reduction of their charges on coal. We give below a statement which shows the variations since 1912 in the charges on both export and bunker coal passing through the docks and also on bunker coal shipped from the depots at Howrah and Shalimar.

Statement of rates per ton charged by the Port Commissioners on export and bunker coal passing through the Kidderpore Docks and on bunker coal passing through the depots at Howrah and Shalimar.

	1912-15	1915-16	1916-17	1917-20	1920-21	1921-22	1922-24
	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
Export coal to Kidderpore Docks—							
Shipping charges	0 5 6	0 5 6	0 5 6	0 5 6	0 5 6	0 8 0	0 8 0
River dues	0 4 0	0 4 0	0 4 0	0 4 0	0 6 0	0 8 0	0 8 0
Terminal paid by Railways	0 2 3	0 3 5	0 3 5	0 3 5	0 4 6	0 4 6	0 4 7
Terminal paid by public	..	..	..	..	..	..	0 4 6
War Surtax	..	..	0 2 0	0 6 0	..	..	..
TOTAL	0 11 9	0 12 11	0 14 11	1 2 11	1 0 0	1 4 6	1 9 1
Bunker coal to Kidderpore Docks—							
Shipping charges	0 5 6	0 5 6	0 5 6	0 5 6	0 5 6	0 8 0	0 8 0
River dues	0 3 0	0 3 0	0 3 0	0 3 0	0 4 0	0 6 0	0 6 0
Terminal paid by Railways	0 2 3	0 3 5	0 3 5	0 3 5	0 4 6	0 4 6	0 4 7
Terminal paid by public	..	..	..	..	..	..	0 4 6
War Surtax	..	..	0 1 0	0 3 0	..	..	..
TOTAL	0 10 9	0 11 11	0 12 11	0 14 11	0 14 0	1 2 6	1 7 1

	1912-15	1915-16	1916-17	1917-20	1920-21	1921-22	1922-24
	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
Bunker coal to Howrah—							
Shipping charges	..	..	..	..	..	..	..
River dues	0 3 0	0 3 0	0 3 0	0 3 0	0 4 0	0 6 0	0 6 0
Terminal paid by Railways	..	..	..	..	..	..	..
Terminal paid by public	..	..	..	..	..	..	..
War Surtax	..	..	0 1 0	0 3 0	..	..	..
TOTAL	0 3 0	0 3 0	0 4 0	0 6 0	0 4 0	0 6 0	0 6 0
Bunker coal to Shalimar—							
Shipping charges	..	..	..	..	..	..	..
River dues	0 3 0	0 3 0	0 3 0	0 3 0	0 4 0	0 6 0	0 6 0
Terminal paid by Railways	0 2 3	0 2 3	0 2 3	0 2 3	0 2 3	0 2 3	..
Terminal paid by public	..	..	..	..	..	..	0 4 6
War Surtax	..	..	0 1 0	0 3 0	..	..	..
TOTAL	0 5 3	0 5 3	0 6 3	0 8 3	0 6 3	0 8 3	0 10 6

NOTE —On cargo coal dumped at the Kidderpore Docks a dumping charge was levied as follows :—

	Rs. A. P.
1912-21	0 2 0 per ton.
1921-24	0 3 0 ,,
From 1st January 1924	*nil.*

It will be seen from this statement that the Port Commissioners' charges on export and bunker coal passing through the docks fall under the four heads of shipping charges, river dues, terminal charges and dumping charges. Shipping charges are imposed primarily to meet the cost of the labour employed in handling cargo, but against the receipts from them has also to be debited the cost of the overhead charges on the expenditure incurred on providing the docks, on maintaining the head of water and in general supervision. The rate at which shipping charges are levied varies with the different commodities. River dues are a toll payable by all merchandise for the benefit of the port as a whole in order to meet the expenditure on such items as fixed charges, general supervision and maintenance, local taxation, police and lighting, etc., which cannot be allocated or distributed over the numerous different trades concerned. They are levied at a uniform rate on all commodities except cargo and bunker coal and manganese ore. The rate on other commodities has just been raised from Re. 1 to Re. 1-4 per ton whilst those on export and bunker coal remain at 8 annas and 6 annas respectively and on manganese ore at 10 annas. The terminal charges are intended to meet the cost of the railway facilities provided by the port. They are levied at a uniform rate on all commodities and, as we have explained in Chapter V, out of the present terminal of 9 annas 1 pie, which is levied on coal, only 4 annas 6 pies is recovered from the despatcher as part of the freight paid by him to the railway and 4 annas 7 pies is paid by the railways out of their earnings. The dumping charges are levied to cover the cost of the additional handling involved.

The statement given above shows that the shipping charges on export coal have been enhanced by 45 per cent. since 1912, the river dues by 100 per cent., and the terminal charges by 300 per cent. The total enhancement on coal which is not dumped has been from 11 annas 9 pies to Re. 1-9-1, an increase of 113 per cent., whilst that on coal which is dumped has been from 13 annas 9 pies to Re. 1-9-1, an increase of 92 per cent.

We have shown in Chapter V that the net railway receipts on coal from the Bengal coalfields have increased by only 29 per cent. from Jherriah, 33 per cent. from Asansol and 34 per cent. from Raneegunge and, at first sight, an increase of 113 per cent. in the port charges seems out of all proportion to the increase in railway freights. Apart however from the fact that, in dealing with the port charges, we are dealing with much smaller sums than the railway charges, it must be remembered that the Port Commissioners are in a very different position from the railways. Unlike the railways they are under obligation to meet not only the interest on all their loans, by payments direct from revenues at fixed dates, but also sinking-fund charges on every loan from the date when it is incurred, whether or not the work on which the money is spent has commenced to be productive. Again, unlike the railways, they have no margin between revenue and expenditure, in other words the budget for the year is so framed that revenue and expenditure

may balance. At present the expenditure which the Port Commissioners have to meet from revenue is unusually high and is likely to remain so for some years. In addition to the repayment to Government of the Kidderpore Dock loan, they are incurring heavy expenditure in interest and sinking fund charges on the construction of a second lock entrance to the Kidderpore docks from which little, if any, increase in revenue will result. They have also to bear the sinking fund charges on the loans for the construction of the King George's Docks. The first section of this project includes the provision of double entrances which will ultimately serve a large number of berths but, at present, only a few of these are being constructed, and, at the outset, therefore, the revenue which will be forthcoming will be comparatively small. Lastly, they are under a definite obligation to build up during the next few years an adequate reserve fund to meet the deficit expected when the interest on the expenditure on the King George's Dock, now debited to capital, becomes a charge against their revenue account, and this policy has recently necessitated some enhancement of charges from April 1st, 1925.

On general considerations, therefore, we realise that the financial conditions of the Port are not such as would justify us in recommending a drastic reduction of the charges on coal. In examining these charges specifically, that is in endeavouring to compare the Port Commissioners' expenditure on coal passing through the docks with the revenue that they derive from it, we are confronted with the same difficulties as arose in our examination of railway rates. We pointed out in Chapter V that no method has yet been devised in any country in the world for separating the cost of hauling one ton of coal one mile from that of hauling one ton of all goods one mile. In the same way, it is not possible to separate the total cost of the services rendered by the Port Commissioners for one ton of coal from the services rendered for one ton of all goods passing through the Port. This impossibility is, in the main, due to the fact that river dues are imposed to meet the general expenses of the port and cannot be allocated to any particular commodities. An estimate can, however, be made of the margin between the shipping and terminal charges on coal and the cost of the facilities they are levied to meet. The Port Commissioners state that in 1923-24 the cost of labour alone employed in handling each ton of coal worked out to 8·013 annas against 8·6 annas received from the trade, the difference between the latter figure and the eight annas shipping charges shown in the statement above being due to additional charges for night work, etc. There would thus be a small margin of ·587 annas per ton to meet the cost of supervision and overhead charges if no coal were dumped. When the dumping charge of 3 annas per ton was levied, it was passed on to the labour contractors without any deduction. Now that it has been waived temporarily, the charge is paid by the Port Commissioners and the cost to them of labour alone on each ton of coal dumped is thus just over 11 annas against

a recovery of 8 annas. As regards the railway terminal charge, the Port Commissioners state that their income from this charge for the last financial year amounted to Rs. 34,69,000 and their expenditure on railway work to Rs. 24,53,000. There was thus a balance of Rs. 10,16,000 but against this have to be set off the fixed charges on a capital expenditure of Rs. 1,44,66,000, which at six per cent. work out to Rs. 8,49,000, and a share of the cost of the general control. If the total cost of general control were divided in the proportion that the revenue expenditure on the Port Commissioners' railway bears to similar expenditure on other portions of their work, this share would amount to Rs. 3,60,000, leaving out of consideration the value of the land taken up by the railway. On this basis, there was actually a deficit of nearly Rs. 2,00,000 in 1923-24 on the railway part of the Commissioners' activities. In spite of this, the Port Commissioners state that, on a rough estimate, the terminal levied on coal leaves a margin of 2 annas a ton but they claim that against this has to be set off the loss on shipping charges.

We are of opinion that, for the port as for the railways, it is impossible to establish any statistical case for reducing the present level of charges and that a reduction can only be urged on general considerations. The first of these is the unquestionable fact that the methods of handling coal at the port impose an appreciable handicap on Indian coal in its competition with other coals. The second is that the charges levied are high in comparison with those in force at ports which have more up-to-date facilities. We understand that, at Durban, export coal pays only a wharfage charge of one-quarter per cent. *ad valorem* which amounts at the most to about a half penny per ton, and a shipping charge of one shilling per ton unless it is loaded on special stowage conditions, when the charge is 1*s.* 2*d.* per ton. At Delagoa Bay, the shipping charges on coal are $10\frac{4}{5}d.$ per ton which includes trimming on board ship and the wharf dues are a half penny per ton. It will be seen that these rates compare most favourably with the total charge of Re. 1-9-1 levied in Calcutta even when the fact that 9 annas 1 pie out of this is levied as a railway terminal is taken into consideration. Further, the reaction on the prosperity of the port which any recovery of the export trade in coal would cause need hardly be pointed out and we consider it not inequitable to suggest that, on this ground alone, the Port Commissioners might be asked to make some contribution to that end. The Port Commissioners point out that, in present conditions, any concession to coal could only be given at the expense of other commodities, the charges on which are already considerably higher than those on coal. The extent to which other commodities would be affected would, of course, depend on the extent and rapidity of the recovery of the coal export trade: but we trust that, if all our recommendations are put into effect, the recovery of this trade will not long be deferred. Lastly, we have urged as a ground for an increase in the railway rebate the maxim of railway economics that charges should not be more than can be borne by the traffic and the same principle applies to the working of the port.

For all these reasons, therefore, we recommend that there should be a reduction in the charges levied on export coal passing through the port. We have given careful consideration to the question on which of the charges levied by the Port Commissioners this reduction could most suitably be made. The shipping charges, which are levied for definite services, leave no margin and do not, therefore, appear susceptible to reduction. At first sight, a reduction in the railway terminal would appear the most natural because this is the charge which has increased most since 1912 and because, as the Port Commissioners admit, it leaves a small margin of profit where coal is concerned, even if there is none when the whole of the traffic is concerned. The Port Commissioners are, however, averse from making any discrimination in railway terminals which are at present levied at the same rate on all commodities and would prefer that any reduction granted should be on river dues. We accept this view and recommend that the river dues on export coal should be reduced by 4 annas which would bring them back to the pre-war level. Mr. Stuart Williams would prefer not to commit himself to any definite figure.

For the reasons given in Chapter IX, we are strongly of opinion that this reduction should be given only to coal certified under the scheme there put forward. The Port Commissioners no more than the railways can be expected to give valuable concessions to export coal unless the exporters by accepting that scheme furnish evidence of their desire to do all that they can to promote the common object.

Control of labour at the Docks.

90. It was suggested that the Port Commissioners might be in a position to reduce their charges if their labour supply were under their own control instead of being managed by contractors. We are unable to support this suggestion as we consider it very doubtful whether there would be any gain either in economy or in efficiency. If the Port Commissioners were themselves to undertake the supply of all labour at the coal berths, considerable expenditure on the provision of coolie lines would be necessary, but this is expenditure that they would probably have to incur in any case and a much more important argument in favour of the present system is that when there are sudden variations in the demand for labour the labour contractors are able to tap sources of supply which are not open to the Port Commissioners. The chief argument urged for the suggested change was the analogy of Bombay, but we ascertained there that in Bombay coal is handled not by the Port Trust but by private firms and the analogy therefore falls to the ground.

Bunkering at the Docks.

91. It will be convenient to consider the charges levied by the Port Commissioners on the small amount of coal bunkered at the docks with those on coal bunkered from the depots at Howrah and Shalimar. Before proceeding to discuss this, we would mention the suggestion which was made to us as well as to the Port Facilities Enquiry Committee of 1913, that depots for bunker coal should be established inside the

docks. The suggestion was examined at that time mainly from the point of view of avoiding the congestion at the entrance to the Kidderpore Docks caused by the entrance and departure of lighters and boats from and to the coal depots at Howrah and Shalimar. The Port Facilities Enquiry Committee considered it important that the whole question should be taken up at early date, but the outbreak of the war and the restrictions on expenditure that it entailed put a stop to any progress with the scheme. It has not been revived since the war, probably owing to the fall in the number of vessels entering and leaving Calcutta, and the only request for bunkering accommodation in recent years has been one from Messrs. Cory Brothers and Co. who have been allotted space near No. 15 berth in the north-western corner of Dock No. 2 for the stacking of coal to be used for bunkering.

The completion of the new entrance to the Kidderpore Docks in 1927-28 will remove any necessity for the provision of bunkering depots at the docks from the point of view of congestion at the dock entrance. The question has, therefore, now to be examined only with reference to the actual requirements of steamers which bunker coal in the port. Liners which bring miscellaneous imports to the Calcutta jetties and subsequently load cargo for export at the docks or the Garden Reach depot usually take in bunker coal whilst they are lying at the jetties which are easily reached from the depots at Howrah and Shalimar. Liners which both load and unload at the Garden Reach berths usually take their bunker coal at these berths. Coasting steamers and those engaged in the China trade, whether they enter the docks or not, are berthed part of the time in the stream where they also take in bunker coal from Howrah or Shalimar as does the fairly large class of steamers which load and unload cargo entirely in the stream. Steamers which enter the docks to unload imports such as sugar and rice and to load coal and steamers which enter the docks simply to load coal find it convenient to take in bunker coal at the same time as cargo coal. Ordinarily, therefore, the provision of bunkering accommodation at the docks would be of use only to steamers which do no part of their work at the jetties or in the stream but go straight into the docks and leave without going to the coal berths. Their number is not large as is shown by the fact that lighters and boats entering the docks with coal during the last three months did not average more than just over five daily. It would seem, in these circumstances, that the provision of facilities for bunkering coal at the docks is a matter of great importance. We undertsand that, if there is a general demand for them, this could be met by the allotment of an area, in the south-west corner of Dock No. 2, sufficient to provide stacking accommodation for a limited number of firms. Railway lines alongside this area already exist and facilities could also be given for loading coal into boats from the depots. The method of allotting the space and the terms of allotment would be a matter for discussion between the coal trade and the Port Commissioners.

Bunker coal at the coal depots.

92. We show in Appendix XVI that by far the greater part of the coal bunkered at Calcutta now passes through the railway coal depots at Howrah and Shalimar. Of these the coal depot at Howrah is the property of the East Indian Railway Company and the Port Commissioners have nothing to do with it except that they levy the river due of 6 annas per ton on the coal bunkered from it into ocean-going steamers. The depot at Shalimar is the property of the Port Commissioners, who provide not only the land but also the railway sidings and pontoons and gangways for loading lighters and boats. The yard is, however, worked by the East Indian Railway who are paid for this service by the Port Commissioners. In addition to the river due of 6 annas per ton on all coal bunkered into ocean-going steamers from Shalimar, the Port Commissioners also receive a railway terminal of 4 annas 6 pies per ton on all coal arriving at the depot. In this case, the whole terminal is levied from the public and included in the railway freight and no part of it is paid by the railway out of their own funds.

The main criticism which was made to us in regard to the working of the depots at Howrah and Shalimar was that the rents charged for the plots into which they are divided are excessive. In 1920 the Port Commissioners raised the rents at Shalimar from Rs. 100 to Rs. 250 per thousand square feet per annum for the belt immediately fronting the river and in much the same proportion for land further back. In 1922, the East Indian Railway followed suit and raised the rent of plots within three hundred feet of the river front from Rs. 20 to Rs. 250 per thousand square feet per annum with corresponding increases for plots further back. The enhancement of rent in recent years has thus been very heavy, but we are not prepared to say that the present rents are excessive in view of the value of the land and of the facilities provided, which include gangways and pontoons for the loading of coal lighters. The East Indian Railway authorities point out that the working expenses of the Howrah yard, that is the running cost of the locomotives used and the wages of staff alone, are in the neighbourhood of Rs. 60,000 per annum, whereas the amount realised in rents is about Rs. 56,000. The present level of rents insures that the land is put to the best purpose for which it can be used in the interests of the port as a whole, that is as a bunkering depot, and is not merely used as a convenient place for stacking coal. In these circumstances, we must accept the view that these rents are in accordance with present economic conditions. On a depot through which 50,000 tons of coal passes per annum the rent charged works out at only 1 anna 8 pies per ton, and therefore the effect of a reduction on coal owners' costs would be very small.

Charges on bunker coal.

93. The statement in paragraph 89 shows clearly the charges which are levied by the Port Commissioners on bunker coal passing through the Kidderpore docks and the depots at Howrah and Shalimar. We have not

recommended any reduction in the shipping charges or terminals paid by export coal passing through the docks and it follows that we do not recommend any alteration in those charges in respect of coal bunkered at the docks. The terminal levied by the Port Commissioners on coal passing through the Shalimar depot is only 4 annas 6 pies per ton as against 9 annas 1 pie at the docks. If the terminal at the docks is not reduced, there is no justification for a reduction in that levied at Shalimar. The river dues on bunker coal are the same, namely 6 annas per ton, whether it is bunkered at the docks or from the Howrah and Shalimar depots. We consider these suitable and have, therefore, no recommendation to make in regard to the charges at present levied by the Port Commissioners on bunker coal.

Improvements at the coal depots.

94. There is one respect in which the Port Commissioners and the railway authorities can render assistance in regard to coal bunkered from the Howrah and Shalimar depots. At some seasons of the year loading into lighters is rendered difficult at ebb tide owing to the fact that they cannot lie alongside the jetties and the coal has to be carried across boats placed between them and the shore. More frequent dredging and an extension of the pontoons and the gangways into deeper water, with a corresponding extension of the sidings, would rectify this: we understand that, at Shalimar, the Port Commissioners already have this improvement in hand and we recommend that it should receive early attention at the Howrah depot also. At Howrah, the railway engineers decide when dredging should be done and the work is then undertaken by the Port Commissioners. We consider that the decision should be left to the Port Commissioners by whose opinion the Agent of the East Indian Railway has stated his willingness to be guided.

CHAPTER VIII.

Steamer Freights.

Demand for reduction of steamer freights.

95. Steamer freight from Calcutta is so important an item in the costs which determine the price of Indian coal at other ports that we have examined the evidence on this subject very carefully. The witnesses, with a few important exceptions, agreed in stating that freights from Calcutta were excessive. Several attempted to prove this by showing that on a mileage basis freights to Bombay and Karachi were very much higher from Calcutta than from South Africa and the United Kingdom: the Indian Mining Federation added a suggestion that they compared unfavourably with the rates charged for other bulk cargoes; and a few witnesses stated bluntly that the rates on coal must be regarded as excessive because if they were not reduced Indian coal could not compete overseas. In the confidential evidence it was alleged that by agreement among themselves shipping firms in Calcutta keep up the level of freights for coal and that by the manipulation of a rebate system they stifle competition and prevent the loading of coal at Calcutta on vessels which are not under their control. On the other hand, the Indian Mining Federation have suggested that a shipping company deliberately keeps down the level of freights from South Africa so as to facilitate competition by South African coal in foreign ports.

Level of steamer freights.

96. In Appendix XVII there will be found a statement of the average mean rates of freight for coal shipped from Calcutta from 1912 to 1924. The figures in this statement for the rates in 1912 and 1913 do not correspond with those given by Sir R. M. Watson Smyth to the Calcutta Port Facilities Inquiry Committee and quoted in evidence by the Indian Mining Federation: it is hardly necessary to remark on this that the average, as taken by Sir R. M. Watson Smyth, is not likely to correspond with the average mean level, but it may be mentioned that the lower figures quoted in the Appendix have the advantage of corresponding with those preferred by the representatives of the Indian Mining Federation in their oral evidence. We quote below the approximate rates to various ports which prevailed when we were taking evidence in January together with the estimated rates at which a twelve months' contract could be made.

	Average mean 1913.	January 1925.	12 months' contract 1925.	
			From	To
	Rs. A.	Rs. A.	Rs. A.	Rs. A.
From Calcutta to Rangoon . . .	3 0	5 0	5 12	6 4
„ Singapore . .	5 0	6 8	7 4	7 12
„ Colombo . .	5 0	6 8	7 4	7 12
„ Bombay . .	5 8	7 0	8 0	8 8
„ Madras . . .	3 12	6 0	6 8	7 0
„ Karachi . . .	6 4	7 0	8 0	8 8

Coal freights and steamer costs.

97. The increase in steamer freights over their pre-war level cannot be considered excessive if the basis taken for comparison is the cost of working steamers or the general level of prices. A rough idea of the ratio of steamer freights to prices in general may be gathered from the index figures in the "Economist"; its shipping-freight index gives the figures for January as 133·20 for world-freights and 123·83 for Indian freights, where the basis 100 represents the average for the years 1898-1913: as against this the index-figure for prices in that month was 216·7, on the basis of 100 representing the average for 1901-05. The figure for Indian freights does not refer specifically to coal freights but the latter are governed by world conditions, as will be shown later, and follow the level of other Indian freights. Coal freights from Calcutta have increased since 1912 by 66 per cent. to Rangoon, 62 per cent. to Colombo, and 40 per cent. to Bombay, on the figures quoted in Appendix XVII; as against this, the increase in the cost of working steamers has been estimated in evidence at about 75 per cent., and in the very month when the complaints about freight-levels were being voiced by representatives of the coal trade, bunker coal in Calcutta cost over 100 per cent. more than it had cost before the war. The witnesses from the Indian Mining Federation went so far as to state that there had been less increase on steamer-freights than on any other item of coal-export expenses, and though this is not strictly accurate, in view of the figures which we have already given for the railways, freights cannot on the basis of costs be regarded as excessive. It remains to consider whether they are being maintained at an artificial level.

There is no evidence in support of the view that coal-freights are being artificially maintained at their present level. All that was produced in this connection was the suggestion that freights for

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coal are high in comparison with those for other bulk cargoes: but the Indian Mining Federation, who advanced this suggestion merely as their impression originally, failed afterwards to produce any figures to justify it: and it is definitely disproved by the figures in Appendix XVII. The increase on coal from Calcutta has been very much the same as that on rice exported in bulk from Rangoon, and coal shipped to Bombay shows the lowest percentage of increase. The analogy of other bulk cargoes has therefore no force: but apart from it no sort of proof has been advanced to justify a belief that freights on coal from Calcutta are controlled by any combination of shipping firms. It is in evidence that they are not, that there are no private rebates on them, and that the coal trade is an open trade so far as shipping is concerned. It would appear that the idea of a combination to maintain the level of freights for coal from Calcutta is the outcome of inability to understand why, if there is no such cause at work, they should be comparatively higher than those for coal to eastern ports from South Africa and the United Kingdom. This is a point of such importance to our problem that it must be discussed at some length.

Ballast rates and economic rates.

98. The criticisms of coal freights on a mileage basis may be stated in this way: from South Africa to Bombay, for a voyage of 17 days, the rate was 12*s.* a ton in January, but from Calcutta to Bombay, for a voyage of only 11 days, the rate was Rs. 7-8 or about 11*s.* 3*d.* a ton, at 1*s.* 6*d.* to the rupee: if the rate charged from South Africa was a fair one the rate from Calcutta ought to have been below eight shillings: and therefore either South African freights were being kept down deliberately or Calcutta freights were being deliberately kept up. The figures quoted for freight to Bombay are approximately correct: but the deduction that freights are being manipulated is not. The suggestion that for coal from South Africa freights are deliberately kept down by a powerful shipping company is one on which we have naturally not been able to obtain evidence: but the probabilities are against it and we accept the view that a Liner company, such as the one mentioned, would not be content, in these days of low freights, with anything less than the best market rates offering.

The low rate charged as freight on coal from South Africa and the United Kingdom to eastern ports has a simple explanation. A tramp steamer, for which no cargo at an economic rate of freight is available on the spot, must be worked across the seas to a port where a cargo at such a rate will be forthcoming: and the alternative to a ballast voyage at heavy cost is to accept a cargo such as coal at less than an economic rate of freight. Provided that the rate will rather more than cover the expense of detaining the vessel for loading and discharging the cargo, any amount thus received in freight can be set against what would otherwise be a loss on a voyage in ballast, and a non-economic rate can be accepted by the owner because his profit or loss is calculated on the whole round voyage and not on any part of it in isolation. This factor assists the

export of coal only from a port which is largely served by tramp steamers and at which more remunerative cargoes are often not to be had: in other words, it assists export from the United Kingdom and South Africa but not from Calcutta.

Calcutta does not attract tramp steamers. A tramp usually loads a complete cargo of one commodity, such as coal, grain, timber, salt or groundnuts. Of these coal is much the most important commodity that is imported into Eastern ports. Naturally, imported coal is not wanted in Calcutta and for this reason few tramp steamers normally bring cargo there, though ship-loads of salt or timber come in occasionally. Nor are tramps tempted to Calcutta by the hope of picking up a remunerative cargo: for Calcutta is served almost entirely by liners which work in a conference and allow special terms to shippers who ship their cargoes in conference steamers only and not in tramps. If a Calcutta shipper wishes to charter tonnage, he will ordinarily have to obtain it from another port where a tramp steamer has discharged her previous cargo: it might be Port Said (4,750 miles from Calcutta), Aden (3,350 miles), Colombo (1,250 miles) or Singapore (1,630 miles): and the rate of freight offered will have to be such as to cover the cost of a long voyage in ballast. It is only when a steamer has failed to load a remunerative cargo in Calcutta and would otherwise have to be worked in ballast towards a port to which coal can be consigned by Calcutta shippers, that space can be had for coal there at non-economic rates: and for a steady supply of tonnage over a long period freight must be paid at the economic level.

On the other hand, the owners of tramp steamers are often desirous of working them up to Eastern ports, to load for the United Kingdom, the Continent or elsewhere such cargoes as wheat or seeds from Bombay or Karachi, groundnuts from Madras, rice from Rangoon, Bangkok or Saigon, sugar from Java, and soya beans from Vladivostock. If such a tramp steamer is coming out from a port in the United Kingdom, the owner would be willing to accept little more than a ballast rate for coal from a Welsh port to Colombo, or Singapore or any port in India, except Calcutta, according to circumstances. Or it might be that the steamer had discharged cargo at a South American or South African port; it would then pay the owner if he could pick up a cargo of coal at Durban or Delagoa Bay even at low rates: and such steamers are so frequent at these two ports that South African coal-exporters can rely on a regular supply of cheap tonnage eastwards. Similar causes are at work to keep down coal freights from Japan to Singapore. Steamers come down, for instance, from Japan to fetch iron ore from Batu Pahat in Johore near Singapore and these, rather than come light, accept cargoes of coal at ballast rates. Others are available because they are being worked down to Java or even to western countries as distant as Cuba. From Australia also, for similar reasons, space in tramps to Singapore

or Colombo is available at certain times of the year. Thus the comparatively low freights from competing countries must be accepted as inevitable by the Calcutta coal exporter. It should be mentioned also that exchange influences the rates from South Africa to Colombo and Indian ports and from Japan to Singapore, just as it influences the prices of coal from these countries against Indian coal, and that delays in loading coal at Calcutta, for which we have already suggested remedies, tend to make the port less attractive and thus to maintain the rates of freight at a slightly higher level than need be.

Factors determining freight-levels.

99. There remains the argument that steamer freights for Indian coal ought to be reduced because otherwise it cannot compete overseas. We cannot accept the view that steamer owners can be expected to incur a loss in order that the coal trade may make profits, but, if such a proposal did appeal to us as reasonable, it could not be put into effect. Steamer freights cannot be fixed arbitrarily: their rates follow the almost daily fluctuations of the freight market, and these depend on the demand for tonnage and on the available supply of tonnage at ports all over the world. In this respect they differ wholly from railway freights for which maximum and minimum rates can reasonably be fixed by Governments because they allow railways a practical monopoly each in its own area. If a Government seeks to force down steamer freights for any particular commodity or from any port below the world level, shipowners will naturally be reluctant to load that commodity or to send their ships to that port. The result of any attempt to fix arbitrary rates of steamer-freight for coal from Calcutta would be that the coal would not be carried at all in appreciable quantities.

Prospects of a fall in freight-levels.

100. We can see no prospect in the near future of a reduction in the rates of freight for coal from Calcutta, except such as may result from improved despatch. They are already so low as barely to cover costs and no appreciable reduction can be expected till the working costs of steamers are reduced by a fall in the prices of bunker coal, stores, repairs, wages and the like. Nor on the other hand, does there appear to be any chance of a substantial increase in freights from competing countries. It is in evidence that any general rise in freights would probably react to the advantage of Indian coal on rates from South African ports because owners would not delay their ships for loading and discharging a cargo of coal unless the rates of freight were increased proportionately to the increase in the ships' daily earning power. But before this factor became important the general rise in freights would have to be material, and also would have to be maintained over a considerable period.

CHAPTER IX.

Establishment of a Grading Board.

Necessity for grading.

101. So far we have considered our problem mainly from the point of view of the possibility of reducing the price of coal, though the measures which we have recommended for the avoidance of stacking will incidentally enable coal to be despatched in better condition. We now deal with the question of quality which is of prime importance. We have failed in our purpose if we have not already made it clear that purchasers overseas are profoundly dissatisfied with the quality of almost all the Indian coal received by them of late years and that most of it has been equally unsatisfactory as regards condition. We have shown in Chapter II that coal of good quality may be had in India and be had in sufficient quantities for export. The problem now before the coal trade is not merely to enable the overseas purchaser to obtain an assured supply of that coal but to persuade him to give it a trial. With over-production in India and keen competition from other countries, the purchaser is in a strong position; he can pick and choose; and, as was pointed out in Singapore, he does not care whether Indian coal comes in or not. If he is to be tempted to purchase Indian coal, everything must be made easy for him. Any scheme for rehabilitating Indian coal in overseas markets is doomed to failure if it does not meet the wishes of the importers in those markets. We lay particular emphasis on this because it is obvious from the evidence which we have heard in Calcutta that even now exporters of Indian coal do not realise the facts. Several firms have claimed that their reputation stands high, that their coal is known and approved in overseas markets and that so far as they are concerned no change is necessary. We are unable to concur in this view after our visit to the various ports which convinced us that, except in Rangoon and Madras, all the exporters of Indian coal have fallen under one common condemnation. Very few witnesses in Singapore, Colombo, Bombay or Karachi, other than those who were agents for Calcutta houses, differentiated between the various Indian coals or the various Indian exporters: the printed version of the oral evidence of these witnesses by no means always represents the vigour of their denunciations: and it is useless to ignore the fact that exporters who tried to maintain a high standard have suffered from the action of those who neglected everything but the chance of immediate profit. As a Karachi witness pointed out, a good-will which it has taken years to build up may be lost in a moment: and the unscrupulous sellers, who represented second class coals as first class and inferior Jharia coals as Dishergarh, have effectually injured the reputation of all Indian coals by whomsoever exported. In considering therefore the measures to be adopted for securing the quality of the coal exported, we must attach less importance to the views of Calcutta exporters than to those of witnesses in overseas ports.

Requirements of purchasers overseas.

102. The general trend of the evidence that we received in the overseas ports was summed up in the evidence of the General Manager of the Ceylon Government Railways. The purchaser wishes, first of all, to know precisely what the coal is that is tendered to him. If he is offered a Natal coal, he can learn its relative value from the reports of the Natal Coal Testing Committee of 1904-05 and the South African Coal Commission of 1921, or he may be given a copy of the certificate issued by a Grading Board in South Africa, showing the class to which the mine producing the coal has been allotted. But if it is an Indian coal that he is being asked to buy, he has no independent authority from which he may learn its value, and must rely on his general knowledge or on the word of the seller. The remedy of this is to have Indian coal graded by an independent and trustworthy authority. The second point on which the General Manager laid stress was the need for a system of inspection. When a purchaser has decided to buy a particular coal, he wants to be assured that no other will be substituted for it. With Natal coal he gets not only a pit certificate to the effect that it was loaded from a particular colliery and that it was screened, but also an independent statement from the South African Railways giving the wagon-numbers and the quantity of the coal together with the name of the vessel on which it was shipped. Some such certificates are wanted for Indian coal, as well as independent evidence that the coal is shipped in good condition, since a pit certificate will not be accepted as evidence of this for an Indian coal at present.

In our opinion, both these demands are entirely reasonable. We recommend therefore the immediate constitution of a Grading Board with a twofold object. It would grade collieries which produce coal for export and it would arrange the issue of certificates for each consignment of coal exported, shewing not only the colliery and the seam from which it comes but its condition at the time of shipment at the Kidderpore Docks.

We recognise that some of the largest exporting firms would prefer to rely each on its own unaided efforts to reestablish the reputation of its own coal by exporting consignments of assured quality and at a low price. We ourselves saw at Bombay a cargo of Bengal coal, recently landed, which in condition and general appearance compared favourably with the South African coal stacked alongside it. But we consider that by relying on their own isolated efforts these firms are handicapping themselves unnecessarily and that the task of reentering the export markets will be less difficult and less protracted if all the Calcutta exporters work together to re-establish a good name for Bengal coal generally.

A similar problem in South Africa was solved by a system of grading on lines which afford a valuable precedent, though we do not suggest that they should be followed slavishly. In South Africa the need for action was less acute and at the same time the difficulties to be faced were less complex than in India. As we have shown in a previous chapter, there are in South Africa fewer collieries to be co-ordinated and at the same time the coal seams worked for export are far more uniform: but in spite of this,

it was considered necessary to adopt very drastic legislation in order to ensure the export of coal of good quality only. We have printed, as Appendix XVIII, the Act which was passed to provide for the inspection and grading of coal for export and bunkering, but we are unanimous in holding that legislation is not desirable in such matters, if it can be avoided, and that it can be avoided in India. In our opinion, the required results can be achieved by voluntary methods. In the first place, if a Grading Board is constituted, a purchaser overseas is not likely to accept coal which is not covered by its certificate, for the refusal of any colliery to submit its coal for grading will be taken by him as an admission of inferior quality: and, secondly, the restriction of rebates and preferential treatment as regards wagons to coal covered by the Board's certificate will be a direct inducement to collieries to participate voluntarily in the grading scheme. But it must be recognised that, if legislative action is not taken to prevent the substitution of inferior coal by exporters, it will be all the more imperative to constitute the Grading Board in such a way that it will command the confidence of buyers overseas.

Grading as a protection to the buyer.

103. In Singapore, the suggestion that certificates of grade should be given to collieries or to particular consignments aroused immediate suspicion; it was assumed that the exporters of Indian coal were desirous of shielding themselves behind a Government certificate; and it was pointed out politely but firmly that this would not do. Unanimously the members of the special sub-committee of the Chamber of Commerce condemned any system of grading or certification which could be utilised to deny a remedy to a buyer when his coal proved to be inferior; and it was obvious that a Grading Board of which the impartiality was in the least doubtful would do more harm than good. What is required is only a "label attached" to the coal exported, as was said in Karachi; that is, the certificate should be such as to give full information to the buyer but not such as to relieve the exporter of any responsibility.

Constitution of the Grading Board in the initial stages.

104. Before we deal with the question of grading coal, we must consider the constitution of the Grading Board. The practicable alternatives are that the coal trade should establish a new organisation and thus practically give a joint guarantee of the coal exported or that existing organisation should be adapted in some way for the purpose. We favour the latter course for the following reasons. We doubt whether there is sufficient mutual confidence among exporters of coal to enable them to combine for the purpose of grading their collieries and certifying consignments, and we doubt whether, if they did combine, the certificates issued under their authority would command confidence in markets overseas as things are at present. It is true that in the Transvaal a system of control by the coal trade has worked successfully, but the Transvaal mine-owners did not start with a handicap of accumulated distrust among their customers. It will be some years, in our opinion, before such a system is possible in India. There are other difficulties less far-reaching but none the less extremely serious. One of these is the time and another the cost that it

would involve to set up an entirely new organisation. Time would be required to obtain all the detailed information on which grading would be based. Samples of coal would have to be taken for analysis from a great many seams and at a great many collieries, and it has been estimated that it would take upwards of a year for both the Jharia and the Raniganj fields to be covered: even if, as is possible, many of the collieries not directly interested in export did not come forward to have their coal graded at the outset, it seems obvious that it would be many months before a system of certifying export coal could be put into operation. As to cost, at least three mining engineers would be needed at the outset to take samples, and qualified men of the necessary standing could not be obtained at a salary of less than Rs. 1,500 a month. The cost of making analyses of the samples, which cannot be taken as less than Rs. 2,500 a month, would be additional to this. The following is given as a very rough estimate of the cost per month in the initial stages of the work:—

	Rs.
Three mining engineers at Rs. 1,500	4,500
Three clerks at Rs. 50	150
Travelling expenses	1,500
Cost of analysis	3,000
Rents of bungalows and office	450
Miscellaneous	100
Total for the month	9,700

or about Rs. 1,16,000 for the year.

After the main work of grading the collieries and seams had been accomplished, it would still be necessary to retain a staff on the coalfields to inspect the coal despatched and also to sample new seams as they were opened up and resample old seams of which the quality is known not to be constant. The only reduction that could be expected would be on the cost of analyses which would be much fewer in number after the first year: it would be safe to put this at Rs. 350 per month, making the total cost of the work about Rs. 7,000 a month or Rs. 84,000 a year. To this must be added the heavy cost of keeping an inspecting officer at the docks with an office there.

Every month that passes makes the task of recovering overseas markets more difficult for the Indian coal trade. If the Grading Board is to be organised by the coal trade and be representative of the coal trade only, not only will there be delay while the various coals are being tested for grading but further time will elapse while overseas buyers are learning by gradual experience that certificates given by the Indian coal trade are not on that account to be suspected. It would not be difficult for a Grading Board constituted in this manner to obtain analyses which would be generally recognised as correctly representing the coal analysed, since the work could be done at the Government Test House at Alipore, but we are led by the evidence received to fear that certificates based on sampling by representatives of a Board appointed

by the coal-trade would not command immediate confidence in overseas markets. If they did not, their introduction would not assist the exporters of Indian coal to re-enter an overseas market, though it might assist them once they had re-established themselves: for the certificates would themselves be worthless until their value had been established by experience, that is until sufficient cargoes of really good Indian coal covered by certificates had been sold in the market to create a belief that the certificates could be relied upon. It does not seem to us probable that the coal-trade would look with favour on a scheme which promised no assistance in its immediate difficulties.

There is in existence an organisation which, with a little adaptation, could be utilised at once for our purpose and which will inspire the necessary confidence among consumers: it is that of the Chief Mining Engineer to the Railway Board. It would obviously expedite the work of grading coal for export if it could be based on the Chief Mining Engineer's very complete record of analyses of Indian coals, and it would be convenient if his staff on the coalfields and at the Kidderpore Docks were utilised for sampling coal and for inspection purposes. As we have mentioned in Chapter II, the Chief Mining Engineer's analyses were taken to assist him in deciding what coals should be purchased, and at what relative prices, for the Indian railways: they are analyses taken from the point of view of a buyer and cannot be suspected by the most prejudiced of critics as intended to assist anyone to sell coal. If they could be suspected of being in any way biased, this bias must be against the seller of the coal concerned. It appears to us, therefore, that these analyses can be expected to inspire confidence in buyers overseas from the outset. If these figures are to be borrowed, we think that the Chief Mining Engineer should not only have a seat on the Grading Board but be its Chairman. It should include representatives of the coal-trade and representatives of consumers in equal numbers. It is impossible to arrange for direct representation of overseas buyers but we think it obvious that these will have more trust in a body on which there is a majority not interested in the sale of Indian coal. The most suitable constitution for the Board would in our opinion be the Chief Mining Engineer as Chairman *ex-officio*, a representative of the Indian Mining Association, a representative of the Indian Mining Federation, a nominee of the Bengal Chamber of Commerce and a nominee of the Bengal National Chamber of Commerce: these two last would represent the consumers' interests and should not be interested in coal. It is only because we do not wish to increase the size of the Board that we refrain from suggesting the addition of two members with practical experience of the coalfields; and we strongly recommend that the Indian Mining Association and the Indian Mining Federation should select as their representatives men with a knowledge of practical mining and not merely of the commercial side of the coal-trade. As regards the Secretary to the Grading Board, it would obviously be a great advantage from the point of view of inspection at the docks and issue of certificates at the time of shipment if the Secretary were in close touch with the movement of wagons from the coal-

fields. For this reason we think that it would facilitate work if the whole-time officer whose appointment we have suggested in connection with our proposal for the abolition of the Coal Transportation Officer were selected as the Secretary to the Grading Board; if this is done he should receive an allowance for the extra work or his pay should be fixed at a figure to cover it, if the railways concerned agree to his services being utilised in this capacity. This is a point which must be left to the Grading Board itself to decide: but, for convenience, we assume throughout our discussion of the details of the system, later in this chapter, that the Secretary will be this railway officer.

Grading of collieries and seams.

105. We have considered the lines on which grading should be done from the point of view of the consumer overseas and in relation to the coal of which the competition has to be met: and we think it right to record our conclusions for the guidance of the proposed Grading Board. It is imperative that the Grading Board should classify coal in some order of merit; that they should separate coal of different characteristics; and that they should publish a list of the coals which they have graded. The following is the general outline of the classification which we recommend:—

Low volatile coal.	High volatile coal.
Jharia or upper field. Giridih. Karanpura. Bokharo.	Raniganj or lower field Karanpura.
Grade I.	
Under 12 per cent. ash Over 7,000 calories	Under 11 per cent. ash. Over, 6,800 calories. Under 6 per cent. moisture.
Grade II.	
Under 15 per cent. ash Over 6,500 calories	Under 14 per cent. ash. Over 6,300 calories. Under 6 per cent. moisture.
Grade III.	
Under 20 per cent. ash Over 6,000 calories	Under 18 per cent. ash. Over 6,000 calories. Under 6 per cent. moisture
Grade IV.	
Any coals in these fields inferior to the above.	

The percentage of moisture in all the low volatile coals is so low that it is unnecessary to differentiate between the grades in this respect.

The Grading Board should classify the coals worked by each colliery with reference to the seams from which they come. We shall show later in our remarks on sale by analysis that the alternative scheme of classifying individual consignments is as a general method impracticable. The system of grading collieries has been a success in South Africa but cannot be followed in India without

modification owing to the practice of working more than one seam from the same shaft or incline.

The South African Boards are authorised under the Act to publish any information about African coal that they think necessary in the public interest. But a voluntary Grading Board in India, lacking such protection, could not publish information about a colliery without its consent. We therefore consider that as soon as the Grading Board is constituted it should obtain from the Chief Mining Engineer his list of the different Indian coals with their analyses. It should then communicate to each colliery on the list a statement showing the analysis which it is proposed to adopt for the coal in that colliery and the grade in which it is proposed to place it: the colliery would be asked whether it agreed to publication of the information in the statement and, if it considered the analysis or the classification to be wrong, would be able to submit a representation of its case to the Board. If a colliery did not agree to publication of the analysis and classification as originally put forward in the statement, or as amended in consequence of their representations, the Grading Board would simply omit its name from the grading list, and it would not be eligible for the rebate proposed for certified shipment coal or for special facilities as regards wagons. It may be objected that this proposal overlooks the possibility of mistakes by the Grading Board: but we think that it would not be difficult to devise a procedure which would ensure the fullest hearing to any colliery which considered the proposed grading of its coal to be unfair, and that there are great advantages in making the decisions of the Board final. The published list would contain such remarks as the Board might think necessary about its being unsafe to ship particular coals from March to July owing to risk of spontaneous combustion.

Only coal on the grading list would be inspected and granted a certificate by the Board. It will be observed that the scheme of classification put forward contemplates the inclusion in the grading list of any coal, however bad, if the colliery concerned so wishes. We have made this provision deliberately. The object at which we aim is to enable a purchaser to know precisely what coal he is buying and if, knowing that a coal is below the quality of that now known as second class Jharia, he yet desires to buy it, we see no good reason why he should be prevented from doing so. In South Africa, only certain coals are allowed to go on the grading list and the export of a coal that is not on the list is forbidden by law: but Indian conditions differ from South African in this most important respect, that, while nearly all the coal shipped from South Africa goes to other countries, by far the greater part of the shipments from Calcutta goes to consumers in other parts of India. But if it does not seem justifiable to prevent a producer of inferior coal from selling it, for what it is, to buyers in foreign or Indian ports, there is certainly no justification whatsoever for deliberately encouraging him to export that coal, unless precautions are taken to prevent misrepresentation of its quality and further injury to the reputation of Indian coal in general. For this reason we recommend most strongly that, when an uncer-

tified coal is exported, it should be given no rebate, no reduction of port dues and no preferential treatment by the railways: as a solitary exception to this we consider that it would be a useless complication to prescribe that coal shipped for railways by the Chief Mining Engineer to the Railway Board should require to be certified before it is allowed the rebate on railway freight or the reduction in port dues. It would seem that no amendment of the Railway Act is required to enable this to be done and that a notification under section 147 exempting the railways concerned from the operation of section 42 (2) would be sufficient but we are not competent to express an opinion on this point of law.

Mr. Banerjee differs from the rest of us in holding that coals should be eligible for grading and certification even if they are not included in a published grading list, and that the existing railway rebate of 25 per cent. should be given without distinction on all coal exported, the additional rebate being confined to certified coal. He also disagrees with us in regard to the constitution of the Grading Board and on some minor points which he mentions in his dissenting minute.

Inspection by the Chief Mining Engineer's Staff.

106. The information to be given in the list published by the Grading Board will enable a purchaser to see what is the value of any Indian coal offered to him if it is included in the list, and to avoid it if it is not. The next essential is to enable him to obtain precisely the coal that he has decided to buy. This is a matter of efficient inspection. It will already have become obvious that we propose the utilisation of the Chief Mining Egnineer's staff for this purpose in the initial stages. The staff is organised as follows:—There is a Coal Superintendent with headquarters at Dhanbad who is responsible for the distribution and despatch of wagons to practically all railways in India except the East Indian and Bengal Nagpur Railways, and also for the quality of the coal despatched. Under him are five Assistant Coal Superintendents, engaged solely in inspection work: two of them are stationed in the Jharia field and three in the Raniganj. They carry out their inspections by paying surprise visits. Sometimes an officer will visit a particular colliery daily for days on end if it has given trouble by careless loading, sometimes he may not visit a colliery, where the coal runs clean and the supervision is good, more than a few times a month. On some days he will inspect four or five hundred wagons, on others only half that number. He has to use his own judgment and he is held responsible for the quality of all the loading in the district allotted to him.

At the docks there is another Assistant Coal Superintendent, directly under the Chief Mining Engineer: he inspects practically every wagon of coal several times each day while it is being unloaded either direct into the ship or into the dump.

It is not usual for an officer to reject a wagon load of coal at the collieries: if on inspection he considers the coal that is benig loaded in any wagon to be unsatisfactory as regards size or cleanliness, he tells the manager of the colliery, verbally or in writing, and asks him to adjust the wagon before despatch. The Coal Superin-

tendent then requests the officer who will receive the wagon at destination to inspect it on arrival, and if the contents are unsatisfactory either they are rejected and the contractor is told to remove the coal or a deduction is made from the bill.

A consideration of some criticisms of inspection by the Chief Mining Engineer's Staff.

107. The success of the whole system of certification would obviously depend on the confidence reposed in the efficiency of these inspecting officers. We cannot therefore omit a reference to the evidence that inspection by the Chief Mining Engineer's staff has not prevented the despatch of consignments of coal of inferior quality and in bad condition. We need hardly say more than that all these complaints refer to consignments covered by the contracts known as the "Three Year Contracts," the circumstances connected with which are too well known throughout India to require any explanation in this report. The fact to which we invite attention is that under the terms of the contracts the inspecting officers could not reject the coal in these consignments for the defects of which the witnesses complained. It was coal of such a quality that no amount of cleaning, short of breaking it to fragments, would have availed to remove the inferior matter which gave rise to the complaints. The coarse-grained coal was an integral part of the coal contracted for: and it is the presence of this inseparable element of coarse-grained coal that makes the distinction between a first-class and a second-class Indian coal: if this element could be removed, a second class coal would immediately rank as first class. In some of the seams from which the consignments complained of were drawn, there are innumerable bands or very thin layers of shale or sandstone-shale, the elimination of which is impossible. To reject the coal in which such bands of shale or sandstone shale were present would have entailed the removal of 40 to 50 per cent. of the whole, and this would have been equivalent to denouncing the contract. The complaint as to the dirty state of the coal thus really related to its initial quality and not to its condition. The failure to reject the coal on the ground that it had not been properly screened was due to screening being impossible owing to the wagon-position. We have already dealt with this point when we explained the impossibility of screening coal that has been stacked. We do not therefore regard the complaints as to the coal covered by the "Three Year Contracts" as proof that inspection by the Chief Mining Engineer's staff is unsatisfactory: and we consider that we are justified in regarding it with confidence in view of the testimony to the satisfactory way in which it has worked when it has not been hampered by difficulties as regards the original terms of purchase. We would refer in particular to the remarks of the Calcutta Port Commissioners and of the representatives of Messrs. Mackinnon, Mackenzie & Company.

Inspection.

108. We contemplate that the system for inspecting certified coal would work as follows. When stations were opened at the docks for the export of a consignment of such coal, the shippers would at once inform the Secretary of the Grading Board at what collieries the coal was to be loaded and in what quantities. The Secretary would notify the

Coal Superintendent at Dhanbad and the Coal Manager of the railway concerned, in order to enable the former to arrange for inspection and the latter for preferential treatment as regards wagons. The Secretary would have no further concern with inspection until the inspection report was received by the Board, after shipment of the coal, but, as regards preferential treatment on the railway he would keep in touch with both the shippers and the railways and follow the movements of shipment coal from the time of its despatch till the time of its arrival alongside the steamer at the docks.

The coal would be inspected while being loaded at the collieries in the same way as coal purchased for the railways now but in greater detail. The inspecting officer would pay particular attention to the seam from which the coal that was loaded was being drawn: and if he were dissatisfied on this account or with the condition of the coal as regards cleanliness or size, he would intimate to the manager that the wagons concerned must be unloaded and adjusted. To insure that this was done particulars of such wagons would be despatched through the Coal Superintendent to the Assistant Coal Superintendent at the docks, who would inspect the coal in them with particular care and reject it if it was still not up to the proper standard. The colliery manager would, as at present with railway coal, send a postcard intimating the numbers of the wagons despatched each day to the Coal Superintendent, who would pass on the information to the officer at the docks, enabling him to insert in the certificate an assurance that the coal loaded on board the vessel came from a particular colliery. If any coal arriving at the docks were considered not to come up to the standard as regards cleanliness or size, it would be liable to be declared unfit for shipment. If a company refused to agree to this (as it could since the whole scheme would be voluntary), the Grading Board would refuse a certificate to the consignment, or even, in extreme cases, might remove its coal from the grading list: this would be a drastic penalty but the importance of maintaining the standard of the certified coal is so paramount that the necessity for drastic action, on occasions, must be recognised.

It will be imperative that coal dumped at the docks by private shippers should, like coal dumped by the Chief Mining Engineer, be arranged in a separate stack for each vessel, just as in Singapore the coal discharged from each vessel is stacked separately by the Harbour Board. If coal for shipment be taken from a dump into which coal from various collieries has been heaped without discrimination, there can be no certainty as to quality. In ports overseas, witnesses spoke with approval of the South African certificates which showed what particular wagons loaded at the colliery had been discharged into the ship: and no approach to this system can be made if the coal that has to be dumped is not dumped separately for each vessel. The system is perfectly feasible as it has long been followed by the Chief Mining Engineer, and we strongly recommend its adoption.

The certificate.

109. We print a form of certificate, based on that now given by the Chief Mining Engineer, which we recommend for certified coal. This would

be filled in and signed by the Assistant Superintendent who inspected the coal at the docks, and be countersigned by the Secretary to the Board. One copy would go to the buyer and one to the seller, while one would be retained by the Board through whom the claim for the rebate would be presented to the railway.

INDIAN COAL GRADING BOARD.

CERTIFICATE OF SHIPMENT.

Report on a cargo of $\frac{\text{Steam Coal}}{\text{Rubble}}$ loaded in S.S.——————
$\frac{\text{Rubble}}{\text{Slack or Dust}}$
at No.————Berth Kidderpore Docks by Messrs.——————
for——————.
Loading commenced at————hours on————and finished at————on——————.
Cargo carried as per Railway Weighment Figures——————
Cargo carried as per Surveyors' Figures——————

Composition of Cargo.	Total Number of Wagons. (Taken from Railway Weighment Returns.)	Tons.	Percentage from each colliery.
(*a*) Coal direct from wagons as per list attached :—*			
Colliery. Seam.			
,, ,,			
,, ,,			
,, ,,			
,, ,,			
,, ,,			
,, ,,			
(*b*) Coal from ground as per list attached :—			
Colliery. Seam.			
,, ,,			
,, ,,			
,, ,,			
,, ,,			

Remarks as to condition of coal when loaded.

(*a*) From wagons.

(*b*) From ground.

Signed——————
Inspecting Officer.

Countersigned——————
Secretary, Grading Board.

* The list would give the numbers of the individual wagons loaded at each colliery.

Fees for inspection and certification.

110. We suggest that the cost of any analysis demanded by a colliery should be met by that colliery. The figures of coal passing through the port of Calcutta last year show that about half a million tons of coal other than coal shipped by the Chief Mining Engineer were exported. A fee of anna one per ton on this would, therefore, produce over Rs. 30,000 which should suffice to meet any expenditure involved in inspection.

Weighment.

111. The question of securing figures of weight which would be satisfactory to all parties, *i.e.*, to the sellers, the railways, the port authorities, the shipowners and, above all, the buyers, is a highly technical one, which in our opinion, demands closer investigation that we have been able to give it. We would, therefore, recommend that it should be examined by the expert committee which we have suggested in paragraph 87 and which for this purpose should be strengthened by the addition of a representative of shipping interests and by a cargo surveyor.

Ultimate constitution of the Grading Board.

112. The system which we have outlined of inspection being done and certificates being given by the staff of the Chief Mining Engineer cannot be regarded as a permanent solution of the difficulty. It is, in our opinion, essential to utilise that staff in the initial stages of the grading scheme but the coal trade should realise that a special organisation to take its place must be built up with all speed. The development of the Karanpura, Bokaro-Ramgarh and Talchar coalfields will necessarily entail ever-increasing work on the Chief Mining Engineer and his staff and it will probably not be possible for them to continue the work of inspection for more than two years. By the end of that time, the Grading Board should have worked out for adoption by the coal trade a scheme for the inspection of export coal by their own independent officers, who would be paid from the proceeds of the fees charged on the coal inspected. It might be possible to secure in place of the Chief Mining Engineer as Chairman an expert of high repute in the mining world, but we think that it would be useless for us to put forward any detailed suggestions in this connection since everything would depend on the success with which the Grading Board had worked meanwhile.

Possibility of sale on analysis.

113. We have referred above to the suggestion that coal should be sold on analysis. In Bombay some of the most important purchasers such as the Port Trust, the Improvement Trust and the Municipality have adopted a system of buying on calories. They obtain from the seller a guarantee of a certain number of calories, and deduct from the price of the coal a fixed amount for every one hundred calories by which the coal on analysis is found to fall short of that figure; if it falls short of the guaranteed figure by more than 500 calories, they have the right to reject it. The coal has to be delivered stacked in the purchasers' yard. There the seller arranges it in heaps of convenient size, and the buyer has the right to select a proportion of these heaps for test as to size and for analysis: this system prevents complaints that the samples were not representative. The

analysis is done by an independent firm and it appears that work on those lines has been successful. There are two points of interest in the system: the first is that it has resulted in Indian coals being accepted after open competition in preference to Natal coals, and the second that it has been applied to the coal supplied by Calcutta firms whose representatives had explained to the Committee the impossibility of any such system. It is clear that Indian coal of proper quality, properly cleaned and sized, can hold its own on such a test: and we consider from what we heard in Bombay that exporters of Indian coal to Bombay should be prepared to submit their coal to this test is future. We do not, however, consider that the system is applicable to export coal generally. Bombay is exceptional in that it is within easy reach of Calcutta and if any disputes arise it is a comparatively simple thing to decide them. The general objection to selling export coal on a certificate of analysis is that it would be extremely difficult to be certain of obtaining a fair representative sample of Jharia coals coming from certain seams which are not uniform. There are certain seams containing sections with little ash and sections with a high ash content and if the coal to be analysed came from such a seam difficulties would be almost inevitable: in particular if the sample selected for analysis contained an undue proportion of the latter sections the analysis would misrepresent the consignment to the disadvantage of the seller. The same objection would apply to an analysis of a mixture. There is not sufficient confidence between the Calcutta exporter and the buyer overseas to enable a system of sale on analysis to work smoothly: the number of samples to be taken and analyses to be made would involve expense and trouble: and trouble is precisely what the buyer overseas wishes to avoid. It is hardly necessary to point out that the system of fixing the price by calories only, as in Bombay, very largely neglects the important factor of ash and would therefore not appeal to the consumers in Colombo and Singapore who regard a low ash content as of the utmost importance to them.

A witness, representing one of the largest producers of coal in Bengal, objected that a system of grading collieries would handicap progress. He pointed out that some seams would be converted from second to first class by the omission of a particular section high in ash, and that if the seam as a whole were definitely classified as second class by the Grading Board, it would be wasted effort to attempt to sell coal from it which had by careful picking been converted into a first class coal because no one would accept it as such in the face of the Board's opinion. We do not agree that this pessimism is justified. The suggested system of classification of Indian coal by the seam and the colliery would prevent the first class section of a seam of uneven quality from being sold to a buyer without his being aware that it would have been second class if it had not been carefully prepared; and it is only fair to him that he should be put on his guard because the risk of deliveries not being up to specification is greater with a coal of this kind than with one coming from a uniform seam. It might pay a buyer to take a coal of this kind but the existence of a grading scheme would be no greater obstacle to his doing so than is the existing haphazard classification of coals into first and second class: we recommend elsewhere propaganda by

the Indian coal trade and this is one of the points on which propaganda might be useful. Such a coal might advantageously be sold on analysis: for the objection as to the difficulty of obtaining a representative sample would not apply strongly when the coal had by careful preparation been rendered uniform. If a particular section only of a seam were being worked there would, of course, be no objection to that section being separately graded.

Certification of bunker coal.

114. We should mention before leaving this subject that we have considered but rejected the idea of extending the system of certificates to coal for bunkers at Calcutta. There are practical objections. At both bunkering depots, at Howrah and at Shalimar, the coal is almost invariably stacked and it would for that reason be most difficult to keep track of consignments covered by particular certificates and to prevent substitution. It would be impossible to take steps altogether to prevent uncertified coal from being stacked at the depots, for a number of depot holders appear to use their stocks as much for local sale as for the bunkering of ships. We are moreover, for the reasons already given in Chapter V, unable to recommend for bunker coal any rebate or any preference on the railways in the matter of wagon supply except for ocean going steamers from Calcutta under mail contracts with Government, and in these circumstances there would be no inducement to a depot holder to stock certified coal rather than uncertified.

only for overseas business but also for internal transaction. Obviously, this is neither fair nor desirable. So far as export is concerned, such publication is not necessary, it is open to the shipper to offer his coal as of Grade A, B, or C, as he may have obtained a certificate. In case of any business eventually put through, the shipping documents would be accompanied by the certificate of the Grading Board. My colleagues seem to have overlooked the important consideration that most effective part of the grading is not placing of a specific coal into a Grade of analysis but in certifying the particular shipment—when actually made, it is the check on the actual loading, and not so much the authoritative pronouncement as to intrinsic merit on approved samples which constitutes the vital part of the system. It is immaterial for buyers to know from a published list that a particular coal a shipper is offering is of high-grade. What he requires is to be satisfied about is that coal originally offered has actually been supplied. It will be admitted that buyers in the export market know that Deshergarh is high grade coal but the crux of the problem is that all coal supplied as Deshergarh is not such.

The publication of Grading Results, on the other hand, will introduce much complication in the internal marketing of coal. It would mean placing a cap on the head of each colliery which it may justly refuse to wear. I grant under ideal conditions of marketing as they prevail more or less in the trade, such standardisation is welcome but, circumstanced as coal trade to-day, it would be unfair in the highest degree. The trade at Home has through experience of many years evolved its own grades and I consider it undesirable to wipe off the existing gradations and begin with a clean slate. Moreover, the confidential character of trade figures has been recognised by even section 9 of the Indian Mines Act and I do not think we should be justified in going beyond the tradition thus established.

Differences summed up.

26. I now pass on to examine the concluding paragraph of Chapter XI of the Committee's report. I find it is here that our respective differences have been accentuated and most glaringly focussed. My colleagues start by expressing an opinion that the main effort in recovering the export market must come from the coal trade itself. I presume the Committee are referring here to the proposal of grading organization. If I am correct in my presumption, I do not think that this effort of the trade will carry it far in recovering the lost markets. My colleagues evidently recognise that the amount of direct assistance suggested is by itself inadequate to bridge the difference between the prices at which the coal trade can offer coal in the export markets and the price at which it can actually find market. But the amount of direct assistance according to their view is no measure of the improved competitive capacity secured for the Indian coal under their recommendation. I have already indicated in an earlier paragraph and I take here the opportunity to stress again that a grading or any other method of improvement of quality

will not help the trade in obtaining better price than what it is getting now. I mean to say that if the position at present at Singapore is that Bengal coal cannot find a market unless the pit-head price is below Rs. 2 to Rs. 2-8 per ton, I think the position would remain substantially the same even if graded coal is shipped to Singapore. I, therefore, dispute the statement of my colleagues that the Coal trade can do anything which will be hopeful in retrieving its export market. In fact, if it were possible, I do not think the Trade would have been slow to take action. As I have mentioned elsewhere, the grading in the sense of improvement of quality was already anticipated by the Coal trade.

The Committee also point out that in the matter of railway and steamer freights, South African coal which is the principal competitor of Indian Coal has no advantage over the latter. I fail to realise what suggestion it is intended to convey by this statement. It is absolutely irrelevant what steamer and railway freights are paid by South African coal. The Indian coal trade laid its case before the Committee which was fully investigated and the Committee have ascertained for themselves what the position of competition is. If as a result of this enquiry it has been proved that coal trade is in need of assistance, I think it would be a pardonable inference to make that the coal trade should obtain such assistance. The Committee refers to the low raising cost of South African mines. It is not difficult to explain what this is due to, but, I do not consider this question has any bearing on the present issue, particularly when the Committee have been satisfied in course of their own labours that the present pit-head cost of Indian coal does not *immediately* admit of any reduction. If any factor with regard to the competitive power of the South African coal has to be taken into account, it is the position if advantage which the Natal coal enjoys with regard to its bunkering demand. No less than 33 per cent. of the output of the Natal mines is consumed for bunkering requirements.

The Committee also refer to their recommendation with regard to the improvement of the Railway facilities and record an opinion that a substantial reduction in the pithead cost would follow from such improvements. I only wish that it was so but the fact remains that such improvement and the consequential reduction in cost is admittedly a matter of time and I do not realise if the suggestion is made that pending such reduction in cost the Coal Export Trade must show no anxiety for its revival. Again the opinion is expressed by the Committee that with the present pithead price Indian coal is in a position to compete at Colombo, Bombay and Madras. I regret, I have to differ from this statement. The cost of production of Jharia and Raneegunje coal has been estimated by my colleagues at Rs. 5 and Rs. 6 respectively, and it is also admitted that in order to find market in all the ports referred to, the pithead price must be below Rs. 5-8. This being so, it is manifestly impossible for the Indian coal to find market unless they are prepared to sacrifice coal at a loss. Moreover, as I have already indicated according to my view, the Committee have under-estimated the

position of competition against Indian coal by annas 8 in each port. Then again there is a very important consideration which has entirely been overlooked. It is true that Rs. 5 is the cost of production of Jharia coal, but it does not follow that the best grades of Jharia coal can be offered for export at Rs. 5-8 or even at Rs. 6. The grades of Indian coal vary very remarkably but their cost of production, for all of them, is practically the same. In the circumstances, if the best grades of coal, with regard to which alone I presume the Committee have estimated their figures, is to be offered at a price just above the cost of production level, the inferior grades of Indian coal will be offered a price below their raising cost. This is a point which the Indian Mining Federation made abundantly clear and it is an acknowledged principle of economics that the prices are determined by the marginal cost of production and not by the cost of production of superior grades of commodity. So long the best grades of coal will be sold at Rs. 6 the depression in the Coal Trade must persist. It is only when the marginal grades will be in a position to earn a profit that the trade may be considered to have turned its worst corner. This brings me to the examination of figures regarding dividends paid by the coal companies referred to by my colleagues. I do not think, these are indicative of any real state of the trade. The census taken of Coal Companies comprise 119 in number, but the total number of coal mines in the Bengal and Bihar fields is well over 600. Assuming even that some of the companies own more than one mine what about 400 coal mines which are not been taken into account in the survey of profits? In referring to the present depression in the Coal Trade, I do not think anybody made a statement that no coal company is earning a profit. Some and particularly those who are favourably placed are undoubtedly earning profits. Moreover, some companies are protected by old contracts at prices which compare very favourably with the current market rates. Be that as it may, being a man of the trade, I can assure the Committee that the prices during the last two years have alarmingly declined; coal which was sold under a forward contract at Rs. 7, this year is not being able to find market at a price higher than Rs. 3-8 or so. Anybody who has watched the course of the coal market in the last two years will have no hesitation to bear testimony to the severe slump in prices and it is useless therefore to draw clever red herrings across the dividends of the limited companies.

With regard to the countervailing duty and bounty, the Committee state that they are precluded by the terms of reference to express any opinion on these questions. But almost immediately they hasten to record their conviction that the countervailing duty would be of no assistance to the Indian Coal Trade in the Home ports. I do not think it is within our province to record any such expression of opinion. The Committee did not examine any witness on this point and I think in fairness to the Coal trade it would have been better for them not to have expressed any view in this connection. The only argument which the Committee have produced in favour of their views is that the countervailing duty would

increase the prices of Indian coal and as such, it would accelerate the tendency at Bombay of change from coal to oil and electricity. I do not think the process of substitution of oil and electricity in place of coal which is now in progress has anything to do with the price of Indian coal. It is rather the precariousness of coal supply at the other end of India which is responsible for such an unfortunate preference. To the extent, however, other forms of fuel or basis of power are, for special reasons, found more desirable than coal on economic ground, any change in the level of coal prices, assuming even there will be any, will have had no bearing on the process of substitution. As regards the reduction in the bunkering demand consequent on the rise of price, on which the Committee lays much stress, I do not think that an increase of 2 or 3 rupees in price of Bengal coal will affect it in any way. Lastly, I would point out that the question of a countervailing duty with all its economic effects involves question of broad and fundamental national issues and it is not for this Committee to pronounce any opinion on the desirability or otherwise of such a fiscal policy. All that we are concerned here is how far after all the channels of improvement that we have explored and the recommendations that we have made, the Indian coal is in a position to compete at the export markets with the competing coals. I again re-iterate my views that Grading or any other measure calculated to improve quality would not fetch better price for Indian coal, and in these circumstances, it is difficult for my colleagues to escape from the conclusion, based on their own findings, that Indian Coal Trade is in need of a much larger measure of direct assistance than what we have been able to suggest. In fact, the coal trade will have ample reason to consider our labours and recommendations as of no value to them unless the assistance is extended to the full and effective extent. I no doubt recognise our own limitations but I nevertheless venture to express a hope that if we have merely tinkered at the problem, it rests with the Government to offer an effective solution of it, particularly as amends for the injury caused to the Coal Trade of India by the unwarranted embargo levied upon her export coal.

W. C. BANERJEE.

APPENDIX I.

PRODUCTION OF COAL IN EACH PROVINCE AND STATE OF INDIA.

Year	BRITISH PROVINCES									
	Burma	Assam	Bihar and Orissa	Bengal †	Punjab	N.-W. F. Province	Baluchistan.‡	Central Provinces	Madras	TOTAL
	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons
1878-1880 (Average)	...	...	*	*946,000*	...	...	...	*41,000*	...	*987,000*
1881-1885 (Average)	...	*12,000*		*1,110,000*	...	...	...	*103,000*	...	*1,225,000*
1886-1890 (Average)	...	*105,000*		*1,411,000*	*16,000*	...	*5,000*	*137,000*	...	*1,674,000*
1891-1895 (Average)	*8,000*	*165,000*		*2,064,000*	*69,000*	..	*19,000*	*134,000*	*1,000*	*2,460,000*
1896-1900 (Average)	*12,000*	*201,000*		*3,763,000*	*83,000*	...	*18,000*	*151,000*	...	*4,228,000*
1901-1905 (Average)	*7,000*	*252,000*		*6,481,000*	*55,000*	..	*39,000*	*167,000*	...	*7,001,000*
1906	1,222	285,490	5,325,291	3,292,529	73,119	...	42,164	92,848	...	9,112,663
1907	...	295,795	6,487,612	3,505,736	60,749	...	42,488	134,088	...	10,526,468
1908	...	275,224	7,992,372	3,567,539	54,794	90	45,212	213,789	...	12,149,020
1909	...	305,563	7,134,573	3,526,238	37,208	96	52,449	238,100	...	11,294,227
1910	...	297,236	7,041,208	3,737,322	49,189	90	52,614	220,437	...	11,398,096
1906-1910 (Average)	...	*292,000*	*6,796,000*	*3,526,000*	*55,000*	...	*47,000*	*180,000*	...	*10,896,000*
1911	...	294,893	7,610,330	3,858,574	30,575	140	45,707	211,616	...	12,051,835
1912	...	297,160	9,126,285	4,306,129	38,409	50	54,386	233,996	...	14,056,515
1913	...	270,862	10,227,557	4,649 985	51,040	90	52,932	235,651	...	15,488 117
1914	...	305,160	10,661 062	4,424,557	54,303	94	48,234	244,745	...	15,738,155
1915	25	311,296	10,718,155	4,975,460	57,911	60	43,607	253,118	...	16,359,632
1911-1915 (Average)	...	*296,000*	*9,669,000*	*4,443,000*	*46,000*	...	*49,000*	*236,000*	...	*14 739,000*
1916	...	287,315	10 767,683	4,992,376	47,449	75	42,163	287 832	...	16,424 893
1917	...	301,480	11,932,419	4,631,571	49,869	215	40.785	371,498	...	17,327,837
1918	...	294,484	13,680,030	5,302.295	50,418	240	43,125	481,470	...	19,852,062
1919	(*a*)1,500	291,734	15,119,812	5.777,632	46,893	20	34,328	497,021	...	21.768,940
1920	...	325,535	11,975,656	4,207,452	58,078	...	33 941	491,205	...	17,091,867
1916-1920 (Average)	(*b*)*1,500*	*300,000*	*12,695,000*	*4,982 000*	*51,000*	...	*39,000*	*426,000*	...	*18,493,000*
1921	300	312,465	12,990,481	4,259,642	67,242	...	54,627	712,914	...	18,397,671
1922	172	348,103	12,711,328	4,328,986	67,180	...	60,135	675,916	...	18,191,820
1923	1,271	326,149	13,212,250	4,621,578	63,501	...	42,562	548,074	...	18,815,385

* Figures included in Bengal.
(*a*) Figures for Northern Shan States.

† Includes figures for Bihar and Orissa up to 1905.

‡ Includes figures of the Kalat State.
(*b*) Figures for 1919.

APPENDIX I—*contd.*

Production of Coal in each Province and State of India.

Year	Indian States				Grand Total
	Hyderabad	Rajputana (Bikaner)	Central India (Rewah)	Total	
	Tons	Tons	Tons	Tons	Tons
1878-1880 (Average)	...	...	...	...	*987,000*
1881-1885 (Average)	...	...	*2,000*	*2,000*	*1,227,000*
1886-1890 (Average)	*41,000*	...	*40,000*	*81,000*	*1,755,000*
1891-1895 (Average)	*197,000*	...	*101,000*	*298,000*	*2,758,000*
1896-1900 (Average)	*378,000*	*3,000*	*141,000*	*522,000*	*4,750,000*
1901-1905 (Average)	*423,000*	*28,000*	*175,000*	*626,000*	*7,627,000*
1906	467,923	32,372	170,292	670,587	9,783,250
1907	414,221	28,062	178,588	620,871	11,147,339
1908	444,211	21,297	155,107	620,615	12,769,635
1909	442,892	11,449	121,496	575,837	11,870,064
1910	506,173	12,744	130,400	649,317	12,047,413
1906-1910 (Average)	*455,000*	*21,000*	*151,000*	*627,000*	*11,523,000*
1911	505,380	14,761	143,558	663,699	12,715,534
1912	481,652	18,251	149,921	649,824	14,706,339
1913	552,133	18,781	148,978	719,892	16,208,009
1914	555,991	17,211	152,906	726,108	16,464,263
1915	586,824	17,796	139,680	744,300	17,103,932
1911-1915 (Average)	*537,000*	*17,000*	*147,000*	*701,000*	*15,440,000*
1916	615,290	13,841	200,285	829,416	17,254,309
1917	680,629	6,045	198,407	885,081	18,212,918
1918	659,122	11,334	199,975	870,431	20,722,493
1919	662,196	14,760	182,141	859,097	22,628,037
1920	694,680	18,216	158,051	870,347	17,962,214
1916-1920 (Average)	*662,000*	*13,000*	*188,000*	*863,000*	*19,356,000*
1921	688,721	24,521	192,034	905,276	19,302,947
1922	642,880	15,055	161,231	819,166	19,010,986
1923	658,429	7,119	175,950	841,498	19,656,883

APPENDIX II.

QUANTITY OF INDIAN COAL* EXPORTED FROM BRITISH INDIA.

(Private merchandise only.)

Year	To Aden	To British East Africa	To Mauritius	To Ceylon	To Java	To Straits Settlements	To Sumatra	To Hongkong	To other countries	TOTAL	
	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Rs.
1891—1895 (average)	*1,000*	...	*2,000*	*28,000*	...	*10,000*	...	..	*1,000*	*42,000*	*4,16,000*
1896—1900 (average)	*19,000*	*1,000*	*8,000*	*193,000*	*2,000*	*69,000*	*3,000*	...	*10,000*	*305,000*	*32,25,000*
1901—1905 (average)	*34,000*	*11,000*	*14,000*	*328,000*	*4,000*	*133,000*	*20,000*	*16,000*	*9,000*	*569,000*	*49,46,000*
1906	19,233	2,700	10,832	416,191	12,103	317,655	71,482	133,752	19,003	1,002,951	79,70,236
1907	13,835	3,700	4,087	320,735	8 264	202,445	84,337	11,266	9,476	658 145	52,73,404
1908	11,224	150	2,508	424,575	8,522	110 100	97,508	2	5 007	659,596	57,35,531
1909	3,460	...	...	313,385	4,718	128,768	79,394	...	24,215	563,940	50,75,918
1910	7,383	...	4,905	522,019	20,055	236,933	100,234	...	96,837	988,366	85,91 977
1906—1910 (average)	*11,000*	*1,000*	*5,000*	*399,000*	*11,000*	*199,000*	*87,000*	*29,000*	*33,000*	*775,000*	*65,29,000*
1911	11,667	...	...	494,063	5,206	225,459	109,383	...	16,399	862,177	72,64,059
1912	12,577	...	5,320	579 151	625	149,031	119,427	...	32 608	898,739	90,27,363
1913	5,336	...	1,890	426,206	...	197,433	102,759	...	25,531	759,155	74 46,571
1914	16,537	...	1,249	341,126	51	111,589	83,739	...	25,455	579,746	51,16,857
1915	10,717	...	1,945	555,241	12,050	99,483	64,373	...	9,233	753,042	69,02,956
1911—1915 (average)	*11,000*	...	*2,000*	*429,000*	*4,000*	*157,000*	*96,000*	...	*22,000*	*771,000*	*71,52,000*
1916	19,386	10	992	549,565	30,380	142,025	104,121	5	35,257	881,741	80,37 889
1917	419	4	...	299,507	...	80,531	8,474	...	19,182	408,117	37,88 372
1918	53	...	...	52,040	...	10,279	...	..	12.094	74,466	7,85,153
1919	13,525	...	...	296,192	17,196	116,304	41,756	8,710	14,854	508,537	60,38,113
1920	83,669	...	1,500	685,559	16,083	228,355	69,473	...	140,119	1,224,758	1,57,13,036
1916—1920 (average)	*23,000*	...	*1,000*	*377,000*	*13,000*	*115,000*	*45,000*	*2,000*	*44,000*	*620,000*	*68,71,000*
1921	17,576	2	...	236,645	...	11,373	6,251	...	3,724	275,571	38,47,395
1922	...	...	...	76,742	50	...	...	...	319	77,111	10,62,433
1923	...	502	...	119,620	100	15,388	...	10	955	136,575	23,41,939
1924	7,423	...	...	170,701	...	17,763	...	..	10,596	206,483	34,19,098

* Excluding bunker coal and Government Stores, but including coke and patent fuel.

APPENDIX III.

Exports of coal from the port of Calcutta.

	To Foreign ports Tons	To Indian ports Tons	Total Tons
1910-11 . . .	887,362	2,210,517	3,097,879
1911-12 . . .	871,308	2,017,183	2,888,491
1912-13 . . .	879,390	2,237,076	3,116,466
1913-14 . . .	721,349	2,324,167	3,045,516
1914-15 . . .	592,474	1,904,624	2,497,098
1915-16 . . .	803,303	828,531	1,631,834
1916-17 . . .	823,124	490,028	1,313,152
1917-18 . . .	254,503	206,824	461,327
1918-19 . . .	142,942	101,322	244,264
1919-20 . . .	672,778	213,260	886,038
1920-21 . . .	1,135,722	1,408,686	2,544,408
1921-22 . . .	111,537	1,282,211	1,393,748
1922-23 . . .	97,611	812,136	909,747
1923-24 . . .	131,559	936,504	1,068,063

APPENDIX IV.

Tonnage of coal bunkered at Calcutta.

Year	Foreign Ports Tons	Indian Ports Tons	Total Tons
1896	267,118	136,250	403,368
1897	305,325	173,512	478,837
1898	321,609	175,482	497,091
1899	306,301	197,546	503,847
1900	392,740	222,400	615,140
1901	454,496	224,270	703,425
1902	479,657	216,850	678,766
1903	468,619	234,806	696,507
1904	461,893	297,290	759,183
1905	488,848	349,870	838,718
1906	524,848	371,464	896,312
1907	459,362	462,706	922,068
1908	544,772	513,530	1,058,302
1909	493,636	394,904	888,540
1910	540,552	364,130	904,682
1911	529,163	354,642	883,805
1912	596,629	367,368	963,997
1913	573,298	409,216	982,514
1914	684,082	334,671	1,018,753
1915	542,963	224,701	767,664
1916	491,386	109,544	600,930
1917	400,091	86,304	486,395
1918	307,353	70,932	378,285
1919	469,675	112,043	581,718
1920	673,081	172,932	846,013
1921	611,858	254,002	865,860
1922	412,670	162,470	575,140
1923	453,054	153,078	606,132
1924	530,557	167,422	697,979

APPENDIX V.

QUANTITY AND VALUE OF FOREIGN COAL* IMPORTED INTO BRITISH INDIA.

(Private merchandise only.)

Year	QUANTITY						
	From United Kingdom	From Australia	From Union of South Africa	From Japan	From Portuguese East Africa (*b*)	From other countries	TOTAL
	Tons	Tons	Tons	Tons	Tons	Tons	Tons
1891—1895 (average)	*677,000*	*17,000*	(*a*)	*7,000*	...	*4,000*	*705,000*
1896—1900 (average)	*267,000*	*21,000*	...	*43,000*	...	*2,000*	*333,000*
1901—1905 (average)	*154,000*	*13,000*	*1,000*	*34,000*	...	*3,000*	*205,000*
1906	199,215	13,961	15	5,358	...	7,816	226,365
1907	227,024	50,696	16,548	3,431	...	3,889	301,588
1908	173,465	129,609	71,831	2,960	...	7,368	385,323
1909	311,213	54,792	91,907	11,413	...	21,096	490,421
1910	261,245	28,040	18,224	6,654	...	1,833	315,996
1906—1910 (average)	*234,000*	*56,000*	*40,000*	*6,000*	...	*8,000*	*344,000*
1911	245,043	35,703	15,086	6,975	4,177	11,685	318,669
1912	145,097	92,087	126,010	97,289	49,648	50,660	560,791
1913	185,034	54,344	167,834	97,208	77,579	65,935	644,934
1914	167,176	33,419	79,495	32,234	58,742	47,692	418,758
1915	47,343	28,106	41,740	18,069	52,312	3,084	190,654
1911—1915 (average)	*158,000*	*48,000*	*86,000*	*50,000*	*49,000*	*36,000*	*427,000*
1916	5,492	12,301	10,799	...	3,587	1,854	34,033
1917	6,993	22,554	3,857	448	9,080	1,976	44,818
1918	8,724	4,857	13,020	3,276	22,680	1,789	54,346
1919	5,643	3,329	18,089	927	16,880	3,897	48,675
1920	5,022	8,134	7,835	4,392	7,933	6,411	30,727
1916—1920 (average)	*6,000*	*10,000*	*11,000*	*2,000*	*12,000*	*3,000*	*44,000*
1921	441,395	111,384	306,968	68,071	156,555	6,466	1,090,749
1922	742,469	17,849	236,034	55,547	157,122	11,618	1,220,639
1923	131,739	59,380	281,793	4,650	115,042	31,404	624,918

* Figures exclusive of Government Stores, but including coke and patent fuel.
(*a*) Average quantity imported is 142 tons.
(*b*) Figures for years previous to 1911 are included in "Other countries."

Year	VALUE						
	From United Kingdom	From Australia	From Union of South Africa	From Japan	From Portuguese East Africa (a)	From other countries	TOTAL
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1891—1895 (average)	*1,20,22,000*	*2,72,000*	*3,000*	*1,13,000*	...	*73,000*	*1,24,83,000*
1896—1900 (average)	*55,90,000*	*3,72,000*	...	*6,66,000*	...	*37,000*	*66,55,000*
1901—1905 (average)	*30,79,000*	*2,11,000*	*18,000*	*4,78,000*	...	*51,000*	*38,37,000*
1906	38,36,556	2,53,985	150	72,408	...	1,44,092	43,01,191
1907	46,24,913	7,90,013	2,62,519	45,521	...	51,310	57,74,276
1908	37,33,039	21,01,125	12,17,923	43,848	...	1,21,727	72,17,662
1909	55,85,831	7,77,681	14,13,691	1,62,692	...	3,20,124	82,60,019
1910	45,89,547	4,27,387	2,76,990	1,46,375	...	27,291	54,67,590
1906—1910 (average)	*44,73,000*	*8,70,000*	*6,34,000*	*94,000*	...	*1,33,000*	*62,04,000*
1911	43,35,790	5,67,366	2,02,743	1,04,625	50,310	1,84,109	54,44,943
1912	29,17,183	14,52,531	21,85,745	15,38,594	8,52,330	8,83,255	98,29,638
1913	41,23,596	8,15,726	30,22,474	16,12,801	13,67,004	12,33,394	1,2',65,775
1914	37,04,856	5,48,145	15,09,305	5,01,494	10,44,756	9,95,390	83,04,036
1915	12,92,160	5,39,370	6,84,913	3,07,994	9,22,791	50,015	37,97,243
1911—1915 (average)	*32,75,000*	*7,85,000*	*15,21,000*	*8,13,000*	*8,47,000*	*6,67,000*	*79,08,000*
1916	3,11,570	2,56,770	4,93,950	15	79,845	38,995	11,81,145
1917	3,60,920	5,63,265	97,260	9,780	2,22,660	64,273	13,18,158
1918	6,02,576	1,46,113	4,47,069	1,90,281	5,61,238	73,559	20,20,836
1919	2,66,916	63,645	5,43,042	34,8 0	4,37,163	71,069	14,16,645
1920	2,95,380	2,01,380	2,54,671	1,32,945	2,37,113	1,71,521	12,93,010
1916—1920 (average)	*3,67,000*	*2,46,000*	*3,67,000*	*74,000*	*3,08,000*	*84,000*	*14,46,000*
1921	1,88,49,295	37,58,254	1,13,76,837	24,07,992	58,74,560	2,50,891	4,25,17,829
1922	2,91,26,337	6,57,330	74,03,672	21,21,080	57,74,455	2,75,770	4,53,58,644
1923	48,99,831	21,61,940	74,49,181	1,64,274	31,10,309	8,67,468	1,86,53,003

QUANTITY OF COAL* IMPORTED INTO BRITISH INDIA BY SEA ON GOVERNMENT ACCOUNT.

—	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923
	Tons	Tons.	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons
Imports	54,738	12,379	3,593	1,627	13,095	205	...	209,007	491,828	4,251

*Including coke and patent fuel.

(a) Figures for years previous to 1911 are included in "Other countries."

NOTE.—Value of imports of coal imported on Government account is not available.

APPENDIX VI.

Coal imported into the Straits Settlements, 1918-23.

	Tons					
	1918	1919	1920	1921	1922	1923
A. British Empire and Protectorates.						
United Kingdom	4,601	693	151	10,364	90,583	33,888
British North Borneo	8 637	3,390	...	5,278	18,921	...
Brunei	13,509	10,178	13,084	...	7,213	6,439
Sarawak	5,612	3,653	1,716	3,249	...	1,800
British India and Burma	19,482	87,066	188,482	12,493	...	21,984
Hongkong	500	56	281	959	2,125	3,169
F. M. S.	...	...	...	...	...	32,741
Non-F. M. S.	...	...	...	...	...	...
Australia	8,074	64,543	135,472	92,941	67,277	34,965
Union of South Africa	12,930	34,634	5,217	11,656	76,501	153,807
Other British Possessions	...	4	...	112	...	...
B. Foreign Countries.						
China	21,694	...	340	26,245	14,652	15,154
French Indo-China	11,424	12,777	12,742	2,831	14,955	10,204
Japan	334,844	271,326	341,195	340,007	226,640	176,692
Dutch Borneo	7,236	12,316	21,281	17,117	17,336	68,101
Sumatra	8,730	2,385	3,680	3,091	11,158	60,104
Siam and Siamese States	...	...	...	...	...	...
Other Foreign Countries	207	20	10	...	...	14,704
TOTAL	457,480	503,041	726,701	533,343	547,367	633,752

Coal imported into the Straits Settlements for the first half of 1924.

A. BRITISH EMPIRE AND PROTECTORATES.

United Kingdom	7,516
British North Borneo	3,877
British India and Burma	6,955
Hongkong	271
F. M. S.	2,141
Non-F. M. S.	25
Australia	37,875
Union of South Africa	120,063
Other British Possessions	...

B. FOREIGN COUNTRIES.

China	34,521
French Indo-China	420
Japan	38,215
Dutch Borneo	40,067
Sumatra	24,449
Other Foreign Countries	17,875
TOTAL	334,270

APPENDIX VII.

Imports of Coal into Colombo, 1910—1924.

Countries	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924
By Private Firms.	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons
United Kingdom	339,623	260,289	278,466	234,234	263,054	57,325	39,256	17,417	187	2,104	6,165	129,568	240,576	166,968	182,037
British Colonies—															
British India	448,583	395,878	555,628	364,020	269,575	451,962	446,437	227,261	71,044	488,696	640,742	201,479	14,242	32,756	70,057
Natal	5,502	2,853	9,967	21,370	42,406	45,475	5,812	11,120	88,923	59,097	18,886	103,461	196,044	160,299	215,513
Cape Colony	...	...	...	...	...	...	...	...	1,432	1,650	...	...	...	...	...
New South Wales	...	...	...	...	...	21,646	...	1,054	...	7,668	3,762	12,546	6,400	16,473	7,000
South Australia	...	...	...	...	...	...	...	...	...	10,425	...	...	...	(Australia).	(Australia).
Western Australia	...	...	7,141	...	...	...	...	...	...	1,177	3,158	15,610	...	...	...
Queensland	...	...	...	...	...	...	...	...	...	...	...	5,850	...	...	...
Other British Possessions in Africa	...	...	2,442	22,847	6,767	47,498	42,172	24,471	43,059	48,200	16,576	54,134	35,056	29,939	79,078
Victoria	...	...	...	602	...	...	...	...	...	...	...	...	...	...	...
Foreign Countries—															
Japan	7,671	520	32,017	94,317	10,340	17,516	19,776	8,201	10,537	23,602	8,928	28,313	5,815	80	...
Mozambique	...	5,507	...	7,139	6,815	...	20,574	16,555	3,166	43,258	6,976	...	25,027	31,373	7,417
China	...	...	...	...	...	164	...	...	...	...	...	...	...	...	...
Cochin-China	...	...	...	...	...	...	1,650	...	2	...	...	...	...	...	...
Other Foreign Countries in Africa	...	...	...	...	...	...	...	5,017	...	...	...	...	...	...	...
TOTAL	801,379	665,047	885,661	744,529	598,057	641,586	575,677	311,606	218,350	686,077	705,193	640,961	523,100	437,888	561,102
By Government.															
United Kingdom	...	...	...	...	...	...	...	...	...	...	...	...	...	..	...
British Colonies—															
British India	78,089	73,617	72,143	52,093	72,638	87,497	120,367	84,851	55,605	50,045	103,948	74,414	58,616	91,658	97,833
Natal	...	...	...	43,319	34,840	...	...	...	...	...	...	...	...	15,002	16,171
Straits Settlements	...	...	...	...	...	...	...	...	...	...	...	...	...	...	30
TOTAL	78,089	73,617	72,143	95,412	107,478	87,497	120,367	84,851	55,605	50,045	103,948	74,414	58,616	106,660	114,034

Charges on Coal—
Import Harbour dues 25 cents per ton of coal.
Tonnage dues (*i.e.*, dues payable by ships discharging cargo), 25 cents per ton of cargo.
Coal stacking grounds adjoining the Harbour are leased to Coal Importing Companies at a rental of Rs. 8,000 to Rs. 10,000 per acre per annum.

APPENDIX VIII.

Imports into Aden.

Year	From United Kingdom	From Calcutta	From South Africa	From Japan	Total
1912-13 . . .	115,356	10,194	2,500	6,700	134,750
1913-14 . . .	115,143	5,284	5,367	...	125,794
1914-15 . . .	98,731	16,377	25,938	...	141,046
1915-16 . . .	82,671	12,958	29,880	...	125,509
1916-17 . . .	29,988	15,852	43,662	...	89,502
1917-18 . . .	...	5,758	41,861	...	47,619
1918-19 . . .	...	...	76,595	...	76,595
1919-20 . . .	50,904	15,966	85,876	...	152,746
1920-21 . . .	29,167	36,854	87,333	...	153,354
1921-22 . . .	53,882	...	29,403	...	83,285
1922-23 . . .	76,215	...	22,634	...	98,849
1923-24 . . .	59,117	...	51,020	...	110,137

APPENDIX IX.

Imports of coal into Burma from 1910-11 onwards.

Year	Indian Coal.					Other Coal.							Total Indian and other Coal.
	From Bengal	From Bombay	From Madras	From Sind	Total Indian coal	United Kingdom	South Africa	Portuguese E. Africa	Australia	Japan	Other countries	Total other coal	
	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons
1910-11 . . .	424,958	294	173	...	425,425	16,548	83	62	6,582	...	714	23,989	449,414
1911-12 . . .	378,429	...	200	...	378,629	9,120	135	...	1,887	3,335	415	14,892	393,521
1912-13 . . .	454,850	190	700	...	455,740	5,729	...	...	3,727	31,553	1,475	42,484	498,224
1913-14 . . .	473,160	90	1,579	...	474,829	7,011	...	290	13,946	8,310	1,066	30,623	505,452
1914-15 . . .	423,553	1,760	1,190	...	426,503	7,826	...	...	15,292	4,145	1,590	28,853	455,356
1915-16 . . .	408,588	...	350	...	408,938	3,385	226	...	4,753	7,330	631	16,325	425,263
1916-17 . . .	419,719	593	555	50	420,917	1,308	400	...	6,551	180	1,221	9,660	430,577
1917-18 . . .	214,358	100	520	...	214,978	2,643	1,130	...	1,854	75	1,493	7,195	222,173
1918-19 . . .	183,666	86	...	...	183,752	6,301	...	...	2,359	2,663	1,089	12,412	196,164
1919-20 . . .	268,870	520	1,165	...	270,555	5,011	...	...	...	...	1,460	6,471	277,026
1920-21 . . .	415,694	500	330	...	416,524	2,314	...	...	23,244	7,425	5,079	38,062	454,586
1921-22 . . .	359,410	495	800	...	360,705	59,573	...	83,812	24,242	37,491	3,613	208,731	569,436
1922-23 . . .	331,530	...	...	...	331,530	40,604	12,888	21,097	4,018	5,937	1,275	85,819	417,349
1923-24 . . .	503,204*	Not available	...	...	503,204*	1,811	26,901	15,358	6,970	430	5,999	57,469	560,673
April 1924 to end of December.	281,090*	...	...	...	281,090*	3,117	2,978	...	1,342	187	60	7,684	288,774

* Represent exports from Bengal.

APPENDIX X.

Imports of coal into Madras from 1910-11 onwards.

	Indian Coal.			Other Coal.							Total Indian and other Coal.
	From Bengal	From Bombay	Total	United Kingdom	South Africa	Portuguese East Africa	Australia	Japan	Other Countries	Total	
	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons
1910-11	235,397	2	235,399	1,438	3,022	...	...	...	...	4,460	239,859
1911-12	272,793	529	273,322	1,114	...	...	602	...	56	1,771	275,093
1912-13	378,514	928	379,442	679	...	...	14,953	...	135	15,767	395,209
1913-14	341,588	1,282	342,870	262	5,538	1,207	5,479	...	756	13,242	356,112
1914-15	367,242	1,897	369,139	254	...	436	...	...	388	1,078	370,217
1915-16	215,235	3,191	218,426	...	...	...	...	...	12	12	218,438
1916-17	54,912	4,742	59,654	138	...	...	605	...	138	881	60,535
1917-18	13,674	5,176	18,850	100	...	...	...	...	55	155	19,005
1918-19	34,546	2,660	37,206	...	...	...	...	...	25	25	37,231
1919-20	45,294	4,760	49,964	101	...	...	...	...	55	156	50,120
1920-21	177,921	4,408	182,329	...	...	...	...	...	...	...	182,329
1921-22	309,491	3,506	312,997	24,191	19,905	42,101	...	...	...	86,197	399,194
1922-23	330,927	3,070	333,997	14,603	39,549	...	150	3,252	10	57,564	391,561
1923-24	207,781	4,209	211,990	14,463	27,415	13,914	11,411	...	...	67,203	279,193
1924 (April to December) .	250,551*	...	250,551	11,727	9,289	58	6,242	...	16	27,333	277,883

* Represent exports from Bengal.

APPENDIX XI.

Imports of coal into Bombay (excluding Sind) from 1910-11.

Year	Indian Coal.				Other Coal.							Total Indian and other Coal.
	From Bengal	From Madras	From Sind	Total	United Kingdom	Union of South Africa	Portuguese East Africa	Australia	Japan	Other Countries	Total	
	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons
1910-11 . . .	869,103	...	...	869,103	214,021	12,237	115	36,408	13,629	655	277,065	1,146,168
1911-12 . . .	802,075	...	...	802,075	156,732	19,787	5,373	33,229	10,757	24,733	250,611	1,052,686
1912-13 . . .	713,660	...	...	713,660	140,649	168,006	38,349	76,906	75,680	61,493	561,083	1,274,743
1913-14 . . .	704,307	...	...	704,307	135,188	101,378	66,230	25,884	62,654	52,410	443,744	1,148,051
1914-15 . . .	613,358	...	...	613,358	123,822	67,066	61,321	17,116	36,895	20,008	326,228	939,586
1915-16 . . .	81,221	...	...	81,221	5,195	35,179	39,581	13,588	33	2,145	95,721	176,942
1916-17 . .	1,114	...	...	1,114	1,572	12,617	6,077	12,479	190	370	33,305	34,419
1917-18 . .	...	...	...	...	904	509	...	1,346	8,457	33	11,249	11,249
1918-19 . . .	...	...	949	949	1,300	17,417	32,930	...	1,313	90	53,140	54,089
1919-20 . . .	54,906	...	...	54,906	690	15,557	5,274	1,604	647	480	24,252	79,158
1920-21 . . .	399,452	...	2,000	401,452	6,657	5,960	18,430	8,713	2,650	685	43,095	444,547
1921-22 . . .	348,416	...	...	348,416	564,150	311,555	132,059	62,683	45,651	100	1,116,198	1,464,614
1922-23 . . .	89,289	...	...	89,289	372,815	186,952	12,597	19,689	28,772	100	620,925	710,214
1923-24 . . .	126,065*	...	...	126,065*	45,005	197,890	98,235	32,220	275	1,467	375,092	501,157
1924 (April to December)	174,355*	..	...	174,355*	46,737	76,121	53,329	3,432	2,117	1,048	182,784	357,139

* Represent exports from Bengal.

APPENDIX XII.

Imports of coal into Sind, i.e., into Karachi from 1910-11 onwards.

	Indian Coal.	Other Coal.						Total other coal	Total Indian and other Coal.
	From Bengal	United Kingdom	South Africa	Portuguese East Africa	Australia	Japan	Other Countries		
	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons
1910-11	42,648	12,781	912	...	...	...	...	13,693	56,341
1911-12	59,249	12,551	5,557	...	...	...	120	18,228	77,477
1912-13	87,674	10,657	630	11,910	...	...	85	23,282	110,956
1913-14	81,382	12,498	17,620	11,606	...	...	50	41,774	123,156
1914-15	92,705	10,392	6,416	5,993	...	...	...	22,801	115,506
1915-16	39,567	1,720	...	...	...	...	...	1,720	41,287
1916-17	...	...	...	...	...	...	250	250	250
1917-18	...	...	...	...	...	...	92	92	92
1918-19	...	...	...	...	...	...	...	...	...
1919-20	...	...	...	...	...	...	...	...	...
1920-21	64,617	190	...	...	...	...	58	257	64,874
1921-22	84,684	45,476	8,171	10,300	...	...	...	63,947	148,631
1922-23	35,860	45,606	37,665	7,984	...	...	...	91,255	127,115
1923-24	68,489	16,793	21,452	41,765	9,118	...	60	89,188	157,677
1924 to end of December	61,379*	15,680	24,552	34,820	...	...	75	75,127	136,506

*Represent exports from Bengal.

APPENDIX XIII.

TONNAGE OF COAL BUNKERED AT INDIAN PORTS.

N.B.—*For the years 1911 to 1915, figures for Calcutta only are available.*

At Calcutta.

	Tons.
1911	883,000
1912	964,000
1913	983,000
1914	1,019,000
1915	768,000

	1916	1917	1918	1919	1920 (*a*)	1921	1922	1923	1924
	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons
At Calcutta . .	601,000	486,000	378,000	560,000	936,000	866,000	575,000	606,000	698,000
,, Bombay . .	1,092,000	931,000	697,000	863,000	824,000	498,000	102,000	90,000	64,000
,, Madras . . .	35,000	44,000	36,000	43,000	51,000	49,000	20,000	13,000	25,000
,, Rangoon . .	24,000	53,000	69,000	110,000	156,000	169,000	99,000	101,000	132,000
,, Karachi (*b*) . .	...	...	...	...	...	...	...	...	115,000
TOTAL .	1,752,000	1,514,000	1,180,000	1,576,000	1,967,000	1,582,000	796,000	819,000	1,034,000

(*a*) Represents figures for the official year 1920-21.
(*b*) Figures given to 1924 are not available.

APPENDIX XIV.

Oil-bunkering at different ports.

Port.	Year.	Liquid fuel imports.	Liquid fuel bunkers.	Number of ships bunkered.	Number of ships fitted to burn oil only.	Number of ships fitted to burn oil or coal.
		Tons.	Tons.			
Calcutta	1919-20	Not available.	23,808	57	Not available.	Not available.
	1920-21	Do.	42,051	117	Do.	Do.
	1921-22	Do.	8,913	49	Do.	Do.
	1922-23	Do.	9,152	50	Do.	Do.
	1923-24	Do.	8,712	41	Do.	Do.
	1924-25	Do.	8,579	43*	Do.	Do.
Rangoon	1922-23	397,869	Not available.	Not available.	Do.	Do.
Singapore	1921	13,394	368	1	Do.	Do.
	1922	109,204	2,155	6	Do.	Do.
	1923	504,816	196,646	16	Do.	Do.
Colombo	1922	103,197	77,823	187	Do.	Do.
	1923	128,717	125,281	240	116	64
	1924	161,575	126,773	230	351	78
Madras	1919-20	12,009	1,400	Not available.	2	45
	1920-21	14,289	1,856	Do.	6	86
	1921-22	15,046	881	Do.	5	99
	1922-23	22,888	5,424	Do.	12	113
	1923-24	18,043	5,809	Do.	18	114
Bombay	1920-21	88,417	8,195	Not available.	122	2
	1921-22	132,455	14,389	Do.	109	2
	1922-23	143,109	27,964	Do.	203	1
	1923-24	195,070	39,513	Do.	221	5
Karachi		Not available.	Not available.	Not available.	Not available.	Not available.
Aden	1920-21	42,196	Do.	90	Do.	Do.
	1921-22	35,741	Do.	112	Do.	Do.
	1922-23	69,231	Do.	164	Do.	Do.
	1923-24	155,926	Do.	288	Do.	Do.

* Up to December.

APPENDIX XV.

Statement showing action taken on the recommendations and conclusions of the Coal Traffic Conference held in 1912.

Statement showing action taken on the Recommendations and

Recommendations.	E. I. Railway.
(1) That the system of allotment of wagons was theoretically sound, but it should be rigidly worked to so as to leave no loop-hole for the irregular supply of wagons.	There is no room for any loop-hole for the irregular supply of wagons under the existing system of allotment so far as the railways are concerned.
(2) That at present the allotments are made too early in the afternoon to ensure accurate information in regard to the number of wagons which will be actually received: the allotment should be made as late in the evening as may be necessary to ensure more accuracy in fixing the basis of allotment.	Allotments are made at about 5 P.M. and are based on the empty position at 14 hours. As a result of the introduction of "Control" and of extended telephone communication, it is possible to estimate the number of wagons which will be available with a fair degree of accuracy on the information available at 14 hours. The allotments cannot be made much later than this as the allotment orders have to be despatched to the various Depot stations so as to permit of the necessary empty loads being made up in time to allow of supplies to collieries being placed, wherever possible, before 7 hours in the morning.
(3) That the basis of a colliery should be calculated on the despatches of a colliery and not on the despatches from the individual sidings serving the colliery.	The bases of collieries are now calculated by the Coal Transportation Officer on their raisings as furnished quarterly by the Chief Inspector of Mines and on stocks.
(4) That the questions (a) whether the carriage of locomotive coal for railways should have precedence in respect to the supply of wagons over the carriage of coal required for steamers and industrial enterprises, (b) whether shipment coal should be considered as coal for special purposes and be entitled to priority in the supply of wagons were matters which required early settlement, action being taken in the first instance by Chambers of Commerce and the Indian Mining Association.	Locomotive coal continues to receive precedence in respect of the supply of wagons. Shipment coal also is given special supply when so authorised by the Coal Transportation Officer for Public and the Chief Mining Engineer, Railway Board, for locomotive coal when wagons for this purpose are scarce.

Conclusions of the Coal Traffic Conference held in 1912.

B. N. Railway.	E. B. Railway.	Port Commissioners.
Allotments are now regulated almost entirely by the Coal Transportation Officer, and detailed checks are made to see that wagons are not supplied irregularly.	....	
The allotment is now made as late as possible consistent with accuracy in fixing the basis of allotment. The allotment is completed at 12 hours daily, and owing to the telephone facilities that are available in connection with the Train Control system, full particulars of all wagons which are likely to be available by midnight of the same day are taken into account and allotted.	....	
The basis of a Colliery is now fixed by the Coal Transportation Officer.	....	
At the present time the available wagons are distributed in the following order of precedence—	....	
(1) Locomotive coal.	....	
(2) Specials as authorised by the Coal Transportation Officer.	....	
(3) Emergency.. Small lots and half rakes for Shipment, Bunker and Industrial coal as authorized by the Coal Transportation Officer.	....	
(4) Advance Cumulative. Half rakes for Bunker, Shipment and Industrial coal as authorized by the Coal Transportation Officer.	.. .	
(5) Pro-rata. . .	....	

Statement showing action taken on the Recommendations and

Recommendations.	E. I. Railway.
(5) That it was in the interests of both the railways and the collieries that the supply of empties should be made at regular hours, and in time for early morning work.	On most of the more important Pilot sections, supplies to collieries are made under what is called the 10-hour system, that is to say, the empty wagons are placed in the colliery siding before 7 hours in the morning and taken away loaded at or after 17 hours in the evening.
6) That the railways, if they are not able to carry out this important improvement for all collieries, should endeavour to carry it out for a certain proportion of them.	Where the 10-hour system is not worked to, the reason is that either the existing facilities do not at present permit of this being done or the return in freight and quicker turn round of a small number of wagons daily is not commensurate with the additional expenditure involved by the 10-hour system as compared with the 20-hour system.
(7) That loaded wagons should be removed as soon as possible after they were loaded and the present long delays at collieries of loaded wagons be reduced.	The introduction of the 10-hour system wherever possible and where the return is commensurate with the expenditure involved, meets the suggestion.
(8) That it is possible that the working of these pilots at the collieries, which is left mainly to the discretion of the guard, might be susceptible of improvement.	There is constant supervision over pilot guards by District Officers and Inspectors.
(9) That to get over the difficulty of the Guard and the colliery peon not always meeting when wagons were delivered and drawn each colliery should have a post box into which the guard could post a challan of the wagons he had delivered at the time. The challan should also state the number of wagons available for distribution on that day. This challan should be sent by the Colliery Manager to the District Traffic Office duly initialled if correct and it would then serve as a useful check in the office that the actual wagons delivered were in accordance with the allotment orders.	Challans are delivered in the manner recommended but it is not always the practice for collieries to return them to the District Offices in token of the supply having been correctly made. Many collieries, in fact, retain them for the purpose of record in their own offices. The requisite check in the District Offices is secured by comparison of the Office Allotment Memo. with the Pilot Guard's Supply Memo. and the Pilot Guard's Clearance Memo. The statement received from weigh bridges of wagons involved daily affords an additional check.

Conclusions of the Coal Traffic Conference held in 1912—*contd.*

B. N. Railway.	E. B. Railway.	Port Commissioners.
Supplies of empty wagons to Collieries are made at regular hours, and Collieries are allowed 20 hours for loading purposes.	....	....
Endeavour was made in 1912 to give effect to these recommendations of the Conference, and to supply empty wagons in the early morning and to clear loaded wagons 10 hours later, but this arrangement was found unsuitable for all collieries and two of our largest consignors were unable to work to this arrangement.	....	....
....	....	....
The working of Pilot Guards is frequently supervised by Inspectors and District Officers. Moreover the "Train Control" is in force over the whole B. N. Railway coal fields and by this means a constant check is maintained over the work of each individual guard.	....	.....
Post boxes are provided at the majority of the Collieries, but they are not much used, as the wharf peons of the collieries usually take delivery of the Challans personally, and also hand Declaration Notes direct to the Guard together with the completed challans.		

Statement showing action taken on the Recommendations and

Recommendations.	E. I. Railway.
(10) That a good system of telephonic connection between the collieries, the District Traffic Office and the central distributing station should be installed as soon as possible so that ample information could be obtained by collieries of the working of pilots; advice could be sent when wagons were ready loaded.	The public telephone has since been installed in the Coal Fields and is made full use of.
(11) That every wagon should have a load line calculated on the basis of 42 cubic feet of coal weighing 1 ton.	This is done. Complaints have been made that some foreign wagons do not possess load lines and the matter has in each case been referred to the railway concerned.
(12) That the minimum for charge be 2 tons below marked carrying capacity and no wagon load be adjusted which did not exceed one ton more than the marked carrying capacity of the wagon.	The minimum charge of 2 tons below marked carrying capacity is permitted in all cases. Owing, however, to the large increase in axle-loads the overload of one ton cannot be permitted *vide* paras. 22 (*a*) and 23 (2) (*a*) of the current Coal Tariff (No. 36) but this is more than compensated for by the recent Circular No. 219 of 5th September 1924 allowing increased carrying capacity of wagons for Coal Traffic.
(13) That the system of marking should be the same on all railways and that all coal load lines should be painted in white with the word "coal" marked on the line, and such lines should consist of one line at each end of the wagon, 2 ft. long and two lines one on each side of the door, each 1 ft. long with a broad arrow from the top indicating the position of each line; the thickness of the line should be half an inch.	See reply to (11). Owing to varying specific gravity of coal, uneven loading and variations in air spaces between lumps according as to whether the coal has been picked or not, the load line is not an accurate indication of the extent to which a wagon may be loaded, though it may give an approximate idea. This has long been recognised by the railways and a proposal was made to the trade that collieries should calculate, with the aid of the formula furnished in the extract given below, the height to which the particular coal they were raising should be loaded. "This index figure is the floor area of each wagon worked out in sq. feet and divided into 12 with the result given to five places of decimals. "In order to arrive at the height to which each class of coal may be loaded in each type of wagon it will be necessary to multiply the index figure by the specific gravity of the coal to be loaded

Conclusions of the Coal Traffic Conference held in 1912—*contd.*

B. N. Railway.	E. B. Railway.	Port Commissioners.
Telephonic communication has been introduced.	....	....
The measure proposed has been carried out.	....	....
Do.	Coal is generally charged at 2 tons less than the marked carrying capacity of the wagon and this virtually carries out the recommendations of the Coal Committee.	
Do.	This recommendation has been carried out.	

Statement showing action taken on the Recommendations and

Recommendations.	E. I. Railway.
	and by the quantity of coal which may be loaded in each particular type of wagons as follows :—
	Index figure. Specific gravity of coal. Quantity of coal which may be loaded.
	·05607 × 42 c.ft. × 19 tons.
	"This gives 44·74 inches or 3 ft. 8¾ inches, the height to which the coal may be loaded.
	"The Colliery Manager or his loading Representative will be responsible for—
	(*a*) knowing the specific gravity of each class of coal which he loads up at each of his collieries.
	(*b*) measuring the height to each wagon may be loaded after making the necessary calculations as detailed above and marking the height on the inside of the wagon in chalk.
	"The Railway Companies will be prepared to assist colliery managers further by issuing a printed pamphlet which will save them all calculations. In this pamphlet there will be a separate page for every specific gravity that can possibly be applicable to steam coal, rubble coal, slack coal, soft coke or hard coke. On each such page will be found against the different index figures the heights to which the required amount of coal should be loaded."
	Notwithstanding these endeavours, the proposal was not accepted.
(14) That the present system of marshalling trains for separate destinations at each marshalling station in the collieries and detaining these trains until a full load was received was a serious cause of delay in the use of rolling stock. The Conference were strongly of the opinion that the yard proposed by the E. I. Railway Traffic Officials at Bandel should be built at once (Mr. Highet dissenting). Down coal trains from the collieries being run there without marshalling, that work being done on arrival at Bandel.	The system of marshalling has not been altered but it is not considered that it is a serious cause of delay in the use of rolling stock. The Bandel yard has been remodelled but not sufficiently to do all the marshalling suggested by the Committee. The accommodation in this yard has only just received further consideration but the amount of additional facilities which should be provided is largely dependent on the result of the proposals to build the Bally Bridge.

Conclusions of the Coal Traffic Conference held in 1912—*contd.*

B. N. Railway.	E. B. Railway.	Port Commissioners.
Does not apply to B. N. Railway.		

Statement showing action taken on the Recommendations and

Recommendations.	E. I. Railway.
....	In any case Bandel is not a suitable site to do all the marshalling of wagons received from the Coal fields.
The accommodation at Katras, Kusunda and Jherriah station yard should be increased	The Katrasgarh yard has been remodelled, and considerably enlarged. Electric lighting has also been installed. The Kusunda yard remodelling is now in hand. The Jherriah yard remodelling is now in hand.
(15) That it was considered that ample siding accommodation should be provided at all new collieries and that the siding accommodation of existing collieries should be improved as far as possible.	Applications for new sidings and extension of existing sidings are dealt with on their merits, the chief consideration being the proportion of freight which can be earned from additional traffic anticipated from wagons loaded at the new sidings or extensions of the old, in relation to the Capital expended in their construction.
(16) That the line from Dhanbad to Katrasgarh should be doubled.	This has been done.
(17) That collieries should see that wagons are examined before being loaded and again before being despatched with special reference to the fixing of the doors pins.	Very little assistance is received from collieries in this matter and printed circulars have repeatedly to be issued. Individual cases coming to notice are brought to the attention of collieries, but with the constant changes that take place in the supervision and management, our requests are soon forgotten.
(18) That the Managing Agents should instruct their collieries to load upwards coal in E. I. Ry. covered wagons whenever they are available providing the marshalling of wagons so permitted.	Collieries do not usually load wagons in accordance with the requests of the Railways although such requests are brought to their notice daily on the reverse of their wagon challans. Both the indent form and the wagon challan have a permanent request printed on them to load covered wagons upwards.
(19) That when foreign loco. coal wagons were available and a colliery was not being pressed for the immediate shipment of coal the loading of such loco. wagons should have precedence over the loading of public coal.	Since the introduction of the Wagon Pool, the system of loading a railway's loco. coal in its own wagons sent specially for the purpose is no longer necessary.

Conclusions of the Coal Traffic Conference held in 1912—*contd.*

B. N. Railway.	E. B. Railway.	Port Commissioners.
This is done.	....	
Does not apply to B. N. Railway.	..	
These matters require more attention on the part of Collieries.	....	
Do.	....	
This matter has been disposed of by the introduction of the Wagon Pool.	....	

Statement showing action taken on the Recommendations and

Recommendations.	E. I. Railway.
(20) That the E. I. and B. N. Railways should take immediate steps to increase their supply of wagons pari passu with their facilities for handling them so as to enable them to meet the reasonable demands of the coal trade for the carriage of the output and sale of coal at all seasons.	The supply of wagons and facilities for handling them have been increased, but this was considerably delayed as a result of the War.
(21) That Managing Agents should instruct Colliery Managers to load in groups wagons for the same destination as far as possible.	Our experience is that collieries do not load in groups wagons for the same direction.
(22) That it was very desirable that collieries should endeavour to assist railways as far as they can in the direction of reducing the time required to remove loaded wagons and that the details of such arrangements could best be settled at joint meetings of railway representatives and Colliery Managers.	These meetings were held for sometime but it was found that the number of subjects for discussion did not warrant their continuance. Now that the public telephone has been installed in the Coal Fields, Colliery Managers can always be in close touch with the Railway Officers.
(23) That over-indenting was objectionable, but a colliery might indent for the number of wagons it could load in a day.	Repeated representations resulted in all collieries being permitted to indent to the extent of twice their loading accommodation except collieries who have three wagons space or less. Such collieries are permitted to indent to the extent of three times their loading accommodation. Inflated indents are still, however, quite common.
(24) That the two railways should combine and arrange meetings of the Colliery Managers in the coalfields, to discuss and settle with them the steps which should be taken to constitute regular monthly meetings of Colliery Managers and railway officers at which all points of difficulty should be fully discussed, and, if possible, settled.	See remark against (22).
(25) That more co-operation was very advisable between the E. I. Railway and the E. B. S. Railway and that each should endeavour to do its best to help the other.	Such co-operation does exist and mutual assistance is rendered.
(26) That the new sidings sanctioned by the Port Trust would be an improvement on the present sidings and would tend to enable the Dock Junction work to be done more expeditiously.	

Conclusions of the Coal Traffic Conference held in 1912—*contd.*

B. N. Railway.	E. B. Railway.	Port Commissioners.
A very great increase has been made, and is being made in the provision of facilities.	....	
This is regulated by the Coal Transportation Officer's allotments.	....	
Monthly meetings were held and were called until February 1914. There were no Agenda for the last two or three meetings, and in consequence they ceased to be held.	Meetings were commenced, but were not found to be of any utility and were therefore stopped.	
Collieries are permitted to submit separate indents for each separate route, each indent being equivalent to not more than the full capacity of their siding. Thus if 9 different routes are open, a colliery can indent up to 9 times its siding capacity, provided the indents are for wagons for each route.	....	
See answer to (22) . .	....	
....	There is still room for improvement under this head and the matter is receiving attention.	
	....	The new sidings referred to were provided. The new entrance to the grain sheds referred to in paragraph 33 of the report, page 14, was also provided and has been in use since 1913.

Statement showing action taken on the Recommendations and

Recommendations.	E. I. Railway.
(27) These new sidings would not, however, be sufficient to deal with the development of traffic from railways and in the near future, and that the only course to take would be to completely remodel Dock Junction Yard in light of the large traffic railways would pour into it as the works they now have in hand are completed and the future Dock developments the Port Trust have in contemplation.	
(28) In these circumstances the proper course to take was to divert the E. B. Railway between the vicinity of Tally's Nullah and that of Brace Bridge Junction, so as to leave ample space for the remodelling of Dock Junction Yard.	

Conclusions of the Coal Traffic Conference held in 1912—*contd.*

B. N. Railway.	E. B. Railway.	Port Commissioners.
		At the time the Coal Traffic Conference sat, the Commissioners had already acquired the land necessary for the construction of a new Dock Junction Yard to serve both the Kidderpore and King George's Docks and their outline plans provided for the diversion of the Eastern Bengal Railway as proposed in recommendation 28. The land has been raised but the construction of a new Dock Junction has not been begun, because the present arrangements are sufficient for existing traffic, and it will not be begun in the immediate future because the first portion of the King George's Dock can be served by making comparatively minor extensions to the existing arrangements. Plans and estimates for these extensions have been drawn up and will shortly be submitted to the Commissioners for sanction. Incidentally, the handling of coal wagons will be facilitated by the alterations proposed. A revised plan for the new Dock Junction, which will ultimately be required when the King George's Dock is extended, has been drawn up and will shortly be submitted to the Commissioners for approval, not with a view to completing the work in the near future but to enable the excavations from the King George's Dock to be utilised to advantage in raising the land which will ultimately be required for this new yard.

Statement showing action taken on the Recommendations and

Recommendations.	E. I. Railway.
(29) They were of the opinion that the practice of collieries of over-booking to a berth was extremely objectionable.	Prior to the abolition of dumping charges by the Port Commissioners over-booking to a berth was not indulged in to any great extent. Since, however, the dumping charges have been withdrawn, overbooking occurs in many cases.
(30) They consider that by better watering arrangements, by doing away with wagon examination, by providing a direct route for Bengal-Nagpur and Eastern Bengal Railways exchange traffic and by dealing more rapidly with trains on their arrival in Dock Junction yard it may be possible to reduce the present time of 36 hours allowed for Dock work.	....
(31) That the East Indian Railway should keep a careful watch on the rapid removal of empties from Dock Junction yards.	This matter is carefully watched at Head-Quarters.

Conclusions of the Coal Traffic Conference held in 1912—*contd.*

B. N. Railway.	E. B. Railway.	Port Commissioners.
		Since 1912 a number of improvements have been carried out in the siding accommodation serving the coal berths and these improvements have, of course, re-acted on Dock Junction.
....	....	....
....	....	Additional water columns have been provided and there is now a direct route for Bengal-Nagpur and Eastern Bengal Railways interchange traffic. Wagon examination has not been dispensed with but it causes no appreciable delay. After the 1912 report was published the Commissioners objected to any reduction of the 36 hours' free time then allowed and none was made. They stated that to enable wagons to be turned round quicker it would be necessary to resort more to dumping and they considered that dumping should be reduced to a minimum. Since 1912 the Commissioner's agreements with the Railways have been altered. They were then allowed 36 hours' free time in the case of wagons returned empty and 60 hours in the case of wagons returned loaded. This arrangement was altered in March 1922 and the Commissioners are now allowed 48 hours on all wagons.
....	....	Difficulties are not now experienced by the Commissioners through slow removal of empties at Dock Junction by the East Indian Railway.

Statement showing action taken on the Recommendations and

Recommendations.	E. I. Railway.
(32) That an additional down line should be constructed at once between Burdwan and Bandel.	The Burdwan-Howrah Chord was opened for traffic on the 1st January 1917.
(33) That an additional up line between Burdwan and Bandel should be put in hand without much delay.	
(34) That eventually this quadruple line would have to be extended at no distant date to Asansol.	The line between Burdwan and Khana Junction has been quadrupled.
(35) That it was imperative that Howrah Goods accommodation should be remodelled on a large scale at once.	Since the year 1910 the following additional accommodation has been provided in Howrah Goods. A Riverside Goods Warehouse, consisting of 3 Storeys, each with an approximate floor area of 64,722 sq. ft. was brought into use in February 1910. In 1910 and 1913 two new Jute Sheds consisting of 7 and 5½ bays respectively, each bay 100 ft. long, were built. The approximate floor area of these Sheds is 57,500 sq. ft. and 22,700 sq. ft. respectively. In 1913 there were also built 4 double-storeyed Goods Sheds in replacement of four single storeyed ones. These Sheds were brought into use in March and April of that year and the combined floor area of these four double storeyed Sheds is 2,04,919 sq. feet. The Sheds are provided with Cranes and electrical equipment. In the same year the old Roadside Goods Shed was dismantled. The object of this was to increase the width of the road and so facilitate removal from the Sheds. In 1915 the re-erection of 3 of the old Sheds, in replacement of which the four double storeyed Sheds were built, was taken in hand. It will, therefore, be seen that the Resolution made in the Conference of 1912 has been fully complied with.
(36) That the site now used for coal traffic at Howrah was the obvious site for the extension of the Goods accommodation.	Other methods having been found of extending the accommodation required for Goods Sheds, the coal traffic continues to be dealt with at Howrah.

Conclusions of the Coal Traffic Conference held in 1912—*contd.*

B. N. Railway.	E. B. Railway.	Port Commissioners.
....	....	....
....	....	....
....	....	....
....	.....	....
....	....	....

Statement showing action taken on the Recommendations and

Recommendations.	E. I. Railway.
(37) That this traffic could without any disadvantage to trade be transferred to a site to be provided by the Port Trust near Shalimar which should be used both by the B. N. and E. I. Railways.	
(38) That by the use of the chord connecting the E. I. Railway and B. N. Railway at Lilloah or some other alternative scheme this coal traffic could be taken off the E. I. Railway at Lilloah and run to the new site, an arrangement which would tend to relieve Howrah terminal goods station very much.	The chord or other scheme has not materialized. See items (36) and (37).
(39) That the present sorting yard at Lilloah was inadequate, though the additions and alterations proposed would be of advantage.	Although the Coal Traffic Committee of 1912 considered the yard to be inadequate experience has shown that any large outlay on additional facilities is not required and therefore no material alterations to the Yard have been made.
(40) That it was no use improving Lilloah sorting yard largely until Howrah had been made capable of dealing with a very much larger traffic than at present.	The Howrah Goods Yards have not had any large additions; certain facilities to enable the work in the Yard to be got through quicker have been provided.
(41) That the question of building a proper railway terminal station at Ramkristopur was a matter which required very early attention.	This has not been found necessary.
(42) That the time now allowed, *viz.*, 40 hours to the Port Trust by the B. N. Railway for wagons sent to their Shalimar bunker depots was excessive and should be reduced.	....
(43) That the possibility of receiving wagons from the B. N. Railway more rapidly at the Docks by the Port Trust should be looked into.	....

Conclusions of the Coal Traffic Conference held in 1912—*contd.*

B. N. Railway.	E. B. Railway.	Port Commissioners.
This recommendation is dependent on Recommendations 34, 35 and 36.	....	No action has been taken on this recommendation but the Commissioners are in a position to provide more land for bunker depots at Shalimar if it be required.
Do.	....	....
This does not apply to the B. N. Railway.	....	....
Do.	....	....
This has not been found necessary.	....	....
This was referred to the P. T. Railway but a reduction was not arranged.	....	This matter no longer concerns the Port Commissioners, as the railway traffic at the Shalimar bunker depots is now worked by the East Indian Railway.
Wagons are received by the Port Trust at the Docks as rapidly as we can put them in.	....	No additional accommodation has been provided, because the Agent, Bengal Nagpur Railway, agreed that none was necessary.

Statement showing action taken on the Recommendations and

Recommendations.	E. I. Railway.
(44) That collieries situated in the Jherriah field on one railway have the right, whenever they may so desire, to indent for the other railway's wagons for the carriage of coal by the latter's route to Howrah, Shalimar, Kidderpore Docks, Brace Bridge Hall, Jetties and other Calcutta stations, subject to the following conditions:— When B. N. Railway wagons are supplied coal cannot be booked to Howrah. When E. I. Railway wagons are supplied, coal cannot be booked to B. N. Railway Shalimar Coal Depot Station.	This is permitted.
(45) That collieries on one railway despatching coal to stations on, or *viâ*, the other railway when indenting for wagons, shall name the destination or route, and the railway that receives the indent, if unable to supply its own wagons, shall indent for the wagons of the other railway.	The system of allotment of wagons for loading *viâ* the links is that collieries situated on each railway submit their indents to that railway. The allotment in both cases is, by mutual arrangement, made by the B. N. Railway.
(46) That a representation should be made to the Government of India by the Indian Mining Association urging that, owing to new developments, the arrangement made eleven years ago under which the Jherriah field was divided into areas, each of which was to be served by one railway only should be enquired into at an early date.	....
(47) That in the future there would be a steady expansion of the coal trade required to meet the demands for internal consumption, and that in regard to the export coal trade, provided transport facilities are improved, there are possibilities of expansion.	....
(48) That it was impossible to estimate the life of the Jherriah coal field, but it would certainly be long enough to justify large expenditure in improving existing railway and Dock facilities.	....
(49) That it seemed desirable that some reliable system of check and record should be maintained by railways in order that a watch might be kept and serious delays prevented in the running of single wagons or small numbers of wagons between local stations.	So far as concerns Dock traffic this matter is carefully watched, periodical checks being made by all concerned of date of wagon labels at Dock Junction and *en-route* and delays taken up. At times of congestion in downwards traffic, wagons for Docks are given preference in despatch.

Conclusions of the Coal Traffic Conference held in 1912—*contd.*

B. N. Railway.	E. B. Railway.	Port Commissioners.
When a route is blocked traffic is diverted by the alternative route. The Wagon Pool has done away with the necessity for indenting for the other Railway's wagons.	....	....
Do.	....	....
....	....	....
Transport facilities have been, and are still being, improved.	....	....
....	....	....
A detailed record on the movement of individual wagons is maintained by means of the wagon record system.	....	....

APPENDIX XVI.

Statement of Coal passing through the Port of Calcutta.

—	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924 (Ten months)
	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons
Cargo—													
Docks . .	2,817,172	2,652,427	2,449,669	1,691,489	1,574,245	8,10,516	603,659	1,347,332	2,114,263	1,597,472	774,485	804,262	855,180
Overside . .	..	..	..	..	..	3,104	15,323	20,221	40,528	34,185	8,673	31,721	6,966
Garden Reach Depot.*	..	..	..	..	89,999	106,510	124,097	180,807	246,709	222,445	121,526	225,128	221,686
TOTAL .	2,817,172	2,652,427	2,449,669	1,691,489	1,664,244	920,130	743,079	1,548,360	2,401,500	1,854,102	904,684	1,061,111	1,083,832
Bunker—													
Docks . .	249,852	254,195	292,121	186,615	142,997	71,663	66,413	125,677	188,747	156,830	39,749	36,599	48,960
Overside . .	714,148	728,805	726,879	581,385	411,310	159,170	351,578	406,448	500,244	588,834	412,466	480,259	442,844
Garden Reach Depot.*	..	..	..	..	46,693	93,042	77,185	80,786	157,262	147,843	144,208	96,030	113,787
TOTAL .	964,000	983,000	1,019,000	768,000	601,000	323,875	495,176	612,911	846,253	893,507	596,423	612,888	605,591
GRAND TOTAL .	3,781,172	3,635,427	3,468,669	2,459,489	2,265,244	1,244,005	1,238,255	2,161,271	3,247,753	2,747,609	1,501,107	1,673,999	1,689,423

* Opened in June 1916.

N.B.—The figures for bunker coal loaded overside prior to 1917 are not available in the Port Commissioner's records. The figures of bunker coal for 1912-16 given in para. 3 of the Report have therefore been adopted.

APPENDIX XVII.

Average mean rates of freight.

——	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	Increase in 1924 as compared with 1912
A.—Coal Rates from Calcutta.	Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs. A.	Per cent.
To Rangoon . . .	3 0	3 0	3 8	5 4	10 0	15 0	17 8	12 8	11 0	10 4	9 0	7 0	5 0	66
,, Colombo . . .	4 0	5 0	4 8	8 8	18 8	22 0	29 0	19 0	16 4	13 0	12 8	8 8	6 8	62
,, Bombay . . .	5 0	5 8	5 8	7 8	..	..	..	20 0	21 0	14 0	12 8	9 0	7 0	40
B.—Rice Rates (Nett) from Rangoon.														
To Calcutta . . .	3 8	4 8	6 0	9 0	10 0	25 0	22 0	18 0	9 0	5 0	5 0	5 0	5 0	48
,, Colombo . . .	8 0	9 8	11 0	18 0	22 0	68 0	60 0	27 0	20 0	12 0	9 0	14 0	13 0 / 11 0	50
,, Cochin . . .	8 0	9 8	9 0	11 0 / 15 0	15 0 / 27 0	50 0	27 0	18 0	18 0	12 0	11 0	13 0	13 0	62
,, Bombay . . .	7 8	9 8	10 0	14 0	30 0	65 0	55 0	21 10	18 0	12 0	11 0	13 0	13 0	73
C.—Rates for Jute, Linseed, etc., from Calcutta.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	
To United Kingdom .	25 0	27 0	22 6	55 0	160 0	300 0	320 0	170 0	125 0	60 0	36 0	36 0	38 0	52

The 1921 rates were fixed by the Rice Controller.

APPENDIX XVIII.

Union of South Africa.

Act to provide for the inspection and grading of coal produced in the Union which is intended for export beyond the Union or for bunkering steamers in South African ports; the prohibition or restriction of the export and bunkering of coal when the demand for coal for consumption within the Union warrants it, and the safeguarding of the supply of coal for public utilities.

BE IT ENACTED by the King's Most Excellent Majesty, the Senate and the House of Assembly of the Union of South Africa, as follows:—

Prohibition of export of ungraded coal.

1. After the expiry of six months from the commencement of this Act no coal produced within the Union shall be used for export or for bunkering, unless it has been graded and a certificate in the prescribed form has been granted in respect thereof.

Appointment of grading committees and officers.

2. (*1*) The Minister may appoint one or more grading committees, each consisting of a chairman and four members, to control the grading of coal.

(*2*) If the Minister is satisfied that not less than two-thirds of the collieries in any province are prepared to adopt a method of grading coal in accordance with the principles laid down in this Act, he may appoint such persons as may have been nominated by the collieries of that province, together with an independent chairman nominated by the Minister, to be a grading committee therefor: Provided that a grading committee so constituted may, in the discretion of the Minister, be dissolved by him at any time.

(*3*) If a grading committee is not appointed by the Minister in accordance with sub-section (*2*), or if any grading committee which has been appointed is dissolved by him, he may himself appoint a grading committee consisting of a chairman and four members, two of whom shall be persons nominated by the collieries as prescribed in the regulations.

(*4*) The members of a grading committee shall be remunerated in the manner prescribed by regulation and the committee shall have power to appoint a secretary and graders, inspectors, samplers, and other officers, to establish laboratories and testing stations, and to carry on such experimental and analytical work and tests as it may deem necessary for the efficient performance of its duties.

(*5*) The salaries of members of a grading committee, or such portion thereof as the Minister may decide, the salaries of all officers of the committee, as well as all expenses incurred in connection with its administration and its work, shall be paid out of moneys to be raised as provided in section *seven*.

Method of grading.

(*6*) A grading committee appointed to replace one dissolved by the Minister shall *ipso facto* assume all the obligations, duties, funds and assets of its predecessor.

3. (*1*) The grading of coal shall be conducted in such manner as may be prescribed by the regulations. Grading certificates may be issued by a grading committee and each such certificate shall specify the grade of coal to which it applies and shall be issued and signed on behalf of the committee by the secretary or by one of its graders.

(*2*) In determining the grade of any coal a grading committee shall take into consideration the report of its graders and other officers on the results of their sampling, inspection and tests, and it shall also permit the colliery concerned, if it so wishes to submit facts and figures relating to its coal.

(3) A grading committee may in its discretion refuse to issue a grading certificate in respect of any coal submitted for grading if the liability of such coal to spontaneous combustion is deemed by the committee to constitute a danger to life or property. The decision of the grading committee shall be subject to review by the Minister.

Application by colliery for grading certificate.

4. (1) Any colliery which desires to provide or sell coal for export or for bunkering shall apply to a grading committee within the province where the coal then lies or at the port from which it is to be exported, to grade its coal and the grading committee shall, with all reasonable despatch, take the necessary steps to determine the grade.

(2) Any colliery which is not satisfied with the grade in which its coal is graded may forthwith bring the decision of the grading committee in review before the Minister.

Inspection of coal by Committee or officers.

5. A grading committee may authorize any of its members, officers or servants to enter at any time in and upon any colliery, storage bin, truck, vehicle, vessel or other place where there is coal and any person so authorized may inspect, sample and test such coal for the purpose of ascertaining what its grade may be, and may take and remove samples of coal as he thinks fit. The officers and servants of the colliery so inspected and the officers and servants of any person engaged in or concerned with the export or bunkering of coal shall render such reasonable assistance in the work of inspection and taking samples as may be called for.

Publication of information as to South African coal.

6. A grading committee may from time to time publish in such form as it may deem suitable particulars of the grade of coal available in South Africa and any other information concerning South African coal that it may consider to be of commercial or scientific interest.

Levy on collieries to defray expenditure of committees.

7. (1) A grading committee shall make an initial levy of money on the collieries at the commencement of its operations. The amount so levied shall be based upon the tonnage shipped by the several collieries during the preceding six months. Thereafter a grading committee shall once every quarter levy an amount from the collieries in proportion to the quantity of coal supplied during the preceding quarter by each of them for export and bunkering.

(2) The total quarterly amount so levied shall be the estimated expenditure of a grading committee for the quarter in which the levy is made.

(3) At the end of each calendar year there shall be an adjustment of accounts in accordance with the actual expenditure of a grading committee during that year, and the adjustment shall be taken into account in calculating the amount to be levied from each colliery for the first quarter of the next succeeding year.

(4) A committee may charge for any service rendered by it under this Act such fee as may be prescribed by regulation.

(5) If any moneys payable under this section are not paid by a colliery within fourteen days after its receipt of a notice from a grading committee, giving particulars of the amount payable and demanding its payment, such moneys may be recovered, together with costs and interest, by action in a competent court at the suit of such grading committee.

(6) A grading committee shall be capable of suing and being sued under the name of its chairman who shall be the proper person to execute powers of attorney to bring or defend proceedings.

(7) The accounts of a grading committee shall be audited each year by a competent auditor.

Temporary prohibition or restriction of export.

8. If it appears to the Minister that there is a real or apprehended scarcity of available coal for consumption within the Union, the Minister may by notice in the *Gazette* temporarily prohibit or restrict any or every colliery from exporting or bunkering coal until adequate supplies for local consumption have been assured. No action shall lie against any person prevented from fulfilling in whole or in part any contract entered into before the passing of this Act, by reason of the exercise of the powers granted under this section.

Requisition of coal for use of the South African Railways and Harbours Administration.

9. (*1*) If the South African Railways and Harbours Administration after making all reasonable efforts in that behalf is at any time unable to make satisfactory contracts for securing the coal required for its purposes, by reason of a scarcity of available coal, or of any combine, concerted action or the like between the collieries or any two or more of them it shall have power to call upon the collieries which supply coal considered by it to be suitable for its requirements to deliver such coal in proportion to the total amount sold by each colliery: Provided that such call shall only be made upon the collieries in the province or provinces from which the coal required is usually obtained and no such call shall be made upon any colliery which has entered into a contract to supply coal to the Administration if that colliery has already supplied to it a reasonable proportion of its output. The prices of the coal so requisitioned, as well as the precise quantity to be supplied and the conditions applicable thereto shall, failing mutual agreement, be promptly determined by a board of arbitration, consisting of a representative of the colliery concerned a representative of the Administration, and a chairman mutually agreed between the parties or, failing agreement, to be appointed by the Minister, but such chairman shall be neither a public servant or a person having any financial interest direct or indirect in the coal trade.

(*2*) The South African Railways and Harbours Administration may, if it finds itself at any time temporarily short of coal for its purposes, intercept and apply to its own uses any suitable coal which may be in transit: Provided that the interception and use of any consignment of coal under this sub-section shall be such as to cause the least possible inconvenience and embarrassment to any colliery, consignee or other person, and shall be limited to the quantities urgently required by the Administration day by day. The amount of any particular colliery's coal so intercepted in any one calendar month shall not in the aggregate exceed two and a half per cent. of that colliery's monthly despatches of coal. The price to be paid for coal so intercepted shall be as mutually agreed between the colliery concerned and the Administration, and, failing agreement, the price shall be fixed by a board of arbitration appointed as provided in the preceding sub-section.

Penalties.

10. (*1*) Any person who contravenes or causes to be contravened any provision of this Act or any regulation or makes default in performing any obligation which it is duty to perform, shall, if no penalty is specially provided for such contravention or default, be liable, in the case of a first conviction, to a fine not exceeding one hundred pounds, and in the case of a second or subsequent conviction to a fine not exceeding two hundred and fifty pounds or to imprisonment for a period not exceeding six months, or to both such fine and imprisonment.

(*2*) Any person who obstructs, resists or hinders a grader or other person authorized by a grading committee under section *five*, in the lawful exercise of his powers or duties under this Act, or any regulation, shall be guilty of an offence and liable on conviction to a fine not exceeding twenty-five pounds.

Offence of forging brands or falsely issuing warrants.

11. (*1*) Any person who forges or utters, knowing it to be forged, any certificate or brand, or any writing or signature required by or provided in this Act, shall be guilty of an offence and liable on conviction to the penalties prescribed by law for the crime of fraud.

(*2*) Any person who wrongfully issues a written warrant or invoice, label, analysis or partial analysis, certificate, or notification in respect of export, or bunker coal, if such written document falsely describes such coal or is false in any other material particular, shall be guilty of an offence and liable on conviction to a fine not exceeding one hundred pounds or to imprisonment without the option of a fine for a period not exceeding six months or to both such fine and imprisonment.

Regulations.

12. (*1*) The Governor-General may make regulations not inconsistent with this Act prescribing—

(*a*) the appointment and method of nomination of members of grading committees and the remuneration payable to the members thereof;

(*b*) the procedure of a grading committee in the exercise of its functions;

(*c*) the forms or certificates to be issued in respect of coal graded for export or bunkering;

(*d*) the circumstances under which the shipment of coal may be prohibited or restricted;

(*e*) the fees which shall be payable to grading committees under this Act;

(*f*) the manner in which coal shall be graded,

and generally as to any matter which may be necessary for the better carrying out of the objects and purposes of this Act.

(*2*) The regulations may be made applicable to every or any province, and different regulations may be made in respect of any province or other area of the Union.

Interpretation of terms.

13. In this Act, unless inconsistent with the context—

"export" or "exporting" means the supply of coal for shipment as cargo from a South African port to a destination beyond the Union and South-West Africa;

"bunker" or "bunkering" means the supply of coal to or for the bunkers or bunkering of ships in South African ports;

"grader" means a person appointed by a grading committee to examine or grade coal intended for export or for bunkering;

"Minister" means the Minister of Mines and Industries, or any other Minister to whom the Governor-General may from time to time assign ministerial responsibility for the carrying out of this Act;

"regulation" means a regulation made under this Act and for the time being in force;

"South African ports" mean and include the ports and harbours of the Union and those of South-West Africa and also the Port of Delagoa Bay.

Short title and commencement of Act.

14. This Act may be cited for all purposes as the Coal Act, 1922, and shall commence and come into operation on a date to be fixed by the Governor-General by proclamation in the *Gazette*.

APPENDIX XIX.

Handling of coal at different ports.

(*a*) ADEN.

Method of handling.—Coal is discharged in stream by methods resembling those in use at Colombo.

Stacking grounds.—The stacking grounds, on which the average amount stacked is 60,000 tons, are in private hands.

Costs.—The Port Trust levy a toll of two annas *plus* 70 per cent. surcharge on coal imported for the use of importers, and of 4 annas *plus* 70 per cent. surcharge on coal imported for sale.

The cost of landing and stacking on shore is put at Re. 1-12-0 per ton and the cost of bunkering at the same figure, but it varies if night work is done and according to the number of stages on the ship's side.

(*b*) BOMBAY.

Method of handling.—Coal is almost invariably discharged in stream, not in the docks. It is hoisted by ship's gear from the hold and then tipped overside into lighters which may be either country craft or iron barges.

The country craft sail and the iron barges are towed to the bunders, where the coal is unloaded and carried in baskets on the heads of coolies for dumping on the stacking ground alongside the wharf.

From the stacking ground it is removed to destinations in Bombay either by motor lorry or by bullock cart: or, if it is wanted for bunkering, it is taken out to the ship in lighters.

All labour is supplied by contractors.

Stacking grounds.—There are three stacking grounds belonging to the Port Trust, (1) Mazagon Coal Bunder, (2) Haji Bunder, and (3) Railway Depot Station. The combined capacity of the two first is 215,298 tons, and of the last 141,200 tons. The ground is held on monthly tenancy and the rent is payable whether coal is actually stacked on it or not.

(1) *Mazagon Bunder.*—Rents are Rs. 10 *plus* ten per cent. per month, for each 500 square feet in the 80 feet strip adjoining Wharf Road, and Rs. 7 *plus* ten per cent. for land outside that strip. The coal merchants prefer to use this bunder rather than Haji Bunder.

(2) *Haji Bunder.*—This has rail connections but is considered by merchants to be somewhat remote and is not popular with them. The rent charged is three annas per square yard per month.

(3) *Railway Depot Station.*—This is not accessible by sea and is not used for shipment coal. The rent charged is three annas per square yard per month.

Besides these an additional storage ground and a new coal bunder are being constructed.

Costs.—(1) When coal is landed in the docks, the wharfage charge leviable is Re. 1-0-0 per ton *plus* 50 per cent. surtax: the cost of landing coal by this method is considerably higher than when it is discharged in stream and very little coal is now landed in this way.

(2) On coal discharged in stream and landed at the bunders, the wharfage charge is two annas a ton *plus* 50 per cent. surtax, three annas in all. The cost of discharge from the ships into lighters was quoted as ten annas a ton:

it is paid by the ship. Excluding this the following rates were quoted as average rates for landing and stacking at the bunder.

	Rs.	A.	P.	
Port charges	0	3	0	per ton.
Lighterage	0	10	0	,,
Discharging and stacking at the bunder	0	10	0	,,
Tallying on the ship	0	1	0	,,
Miscellaneous	0	8	0	,,

All save the first item may vary: lighterage, for example, when the committee were in Bombay, cost only six annas per ton and it is in evidence that large importers can work more cheaply. To the above must be added for foreign coal only.

	Rs.	A.	P.	
Duty	0	8	0	per ton.

Cart transport from Mazagon Coal Bunder to the nearest Port Trust Railway station was quoted at twelve annas a ton: for carting to the mills Re. 1-12-0 per ton was a figure given. An additional twelve annas would represent the cost of loading into lorries at the bunder, weighing, unloading and stacking at the mill.

The cost of re-loading the coal into lighters and taking it out to a ship for bunkering is said to be the same as for landing the coal or, on an average, as follows:—

	Rs.	A.	P.
Loading lighters at the bunder	0	10	0
Tallying lighters at the bunder	0	1	0
Lighterage	0	10	0
Loading *ex*-lighter into ship	0	10	0

(3) In order to avoid the extra cost of unloading coal on to the bunder and again loading into lighters for bunkering, agents try to arrange for bunkering direct, by lighter, from a vessel discharging coal in stream. This cannot be done successfully unless arrangements can be made for a regular succession of coal cargoes to arrive at suitable intervals: and it is said to be one of the points in favour of South African coal that steamers arrive regularly in Bombay from South African ports: South African coal thus put into bunkers direct from a vessel discharging in stream does not have to pay duty.

Weighment.—This may be either on the ship or on the bunder.

(*a*) Weighment on the ship is usual with foreign coal and is frequently required for Indian coal also. The cost, which is reckoned at from 4 to 6 annas a ton, is said to be borne by the shipper. The usual method of weighment is in large iron tubs, from which eventually the coal is tipped into the lighter alongside.

(*b*) Weighment on the bunder is carried out by weighing baskets, five at a time, on a portable scale. It is usually done at the time when coal is removed from the bunders whether by land or in lighters for bunkering.

An alternative to weighment on the bunkers is to tally baskets at 40 to a ton. When coal is landed in iron barges, of which the capacity can be calculated, measurement is sometimes substituted for weighment.

(*c*) COLOMBO.

Method of handling.—All coal is discharged in stream. The work of discharging into lighters is usually, for convenience, arranged by the importers, although properly it is the business of the ship: the cost is put at 45 to 47½ cents per ton, according to the class of gear provided on the ship.

The coal is loaded into 1 ton buckets which are lifted by ship's gear and tipped into shoots overside into the lighters. It is taken in the lighters to the

jetty and bagged, in locally made coir bags, on the lighters to facilitate handling by coolies: it is then landed and carried to the stack where it is emptied out on to the heap.

When an order is received for bunkering, the coal is rebagged and taken out to the ship in lighters: the bags of coal are handed up stages placed against the ship's side, from man to man, and the contents shot into the bunker.

The coal is handled by wharfage companies.

Stacking grounds.—The coal grounds, which stretch along the east side of the harbour, belong to Government but are let out to private persons and firms. The rent, which covers the cost of the jetties in front of each ground, is from Rs. 8,000 to Rs. 10,000 a year per acre. Many of the grounds have sheds under which the coal is stacked but there is a tendency to give up using sheds except for Welsh coal.

Costs.—Besides the cost, already noted, of some 45 cents on discharging coal from ships, there are the following charges:—

(*a*) Port dues, paid by the ship,

(*b*) Import harbour dues of 25 cents per ton of coal,

(*c*) Tonnage dues of 25 cents a ton, on inward cargoes only,

(*d*) Cost of lighters from ships to jetty, of stacking, of lighters from jetty to ships and of bunkering, averaging Rs. 3-10.

No attempt is made to avoid any part of these handling costs by bunkering direct *vid* lighter from a ship which is discharging coal. The reason for this is said to be that the system of bagging coal is established in Colombo, that in rough weather it would be impossible to bag coal in lighters in the harbour, and that to bring the lighter to the jetty for bagging to be done would be almost as expensive as the present method.

Weighment.—Ten per cent. of the total can be weighed on shore, if the purchaser wishes, before the coal is sent out to the ship. Usually, instead of weighment, the quantity of coal is calculated by tally of bags or measurement. Some of the barges are 30-ton and some 40-ton; and there is also measurement of ship's bunker space.

Wastage.—A certain amount of coal is lost during discharge from the shoots or overside from lighters. This is salved at intervals by the Port authorities and divided among importers in proportion to their total imports during the quarter. The allowance made for waste when discharging is two per cent., and there is none made when loading.

Rate of discharge.—The rate of discharge per ship is said to be about 1,000 tons, working both sides of the ship, or some 500 tons in rough weather when it is necessary to shut out the weather side. The rate largely depends on the number of ships in port working coal, and it was claimed that, if only one collier were in port, 2,000 tons could be handled.

(*d*) KARACHI.

Method of handling.—Almost all coal is discharged by ship's gear into lighters in stream. It is then usually taken to Baba Island or Bunker Island where it is stacked until it is required for bunkering. The coal is carried in baskets on the heads of coolies.

An alternative, now rarely used, is for it to be discharged alongside the wharves by the aid of coal tubs and loaded into wagons.

Stacking grounds.—The stacking grounds on Baba and Bunker Islands are rented from the Port Trust or Municipality at rates fixed according to the locality and to the amount of work originally necessary for preparing the sites. There is also some stacking accommodation at West Wharf. The total area is about 27,500 square yards.

Costs.—The Port Trust levy a charge of six annas per ton on coal discharged into lighters, and of Re. 1-2 per ton on coal discharged over the wharf.

For unloading and bunkering the inclusive cost is said to vary between Rs. 2-4-0 and Rs. 2-12-0 in all.

Transhipping, to avoid payment of duty and to reduce handling costs, is practised whenever consignments can be arranged to arrive conveniently for the purpose.

Improvements in handling facilities.—No schemes for mechanical appliances are contemplated at present: it has been decided to carry on with coolie labour so long as it is available at reasonable prices.

(e) MADRAS.

Method of handling.—Coal is discharged usually alongside a quay but on occasion, if more than two steamers are discharging coal, in the harbour into lighters. Discharge is by ship's gear.

At the quays discharge may be direct into wagons only at the east and outer quays: but the latter quay cannot be used for this purpose except in fine weather. At the south and west quays the railway line is too far away for the ship's gear to load direct into wagons: the coal has therefore to be discharged on to the quay and thence to be loaded by hand into the wagons.

Whether the coal is discharged at the quay or into lighters, it has eventually to be loaded into wagons for despatch from the harbour or to the Port Trust coal depôt where coal is stacked.

Bunkering is done from railway wagon, usually by hand labour. All labour is supplied by contract.

Stacking ground.—The Port Trust has provided a yard, measuring 222,020 square feet and divided into 25 plots of varying size: it can accommodate some 56,000 tons of coal stacked to 10 feet.

Rent is charged at 2 annas a day for each 1,000 square feet, or less allotted. The yard has railway communications.

Costs.—The costs of discharge, paid by shipper, are from eight to twelve annas: other charges are as follows:—

	Rs.	A.	P.	
Harbour dues (not paid by Railway coal)	0	8	0	per ton.
Quay dues	0	4	0	,,
Landing charges, about	1	2	0	,,
Cost of additional handling, if the coal is not discharged direct into wagon	0	4	0	,,
Bunkering by hand from wagon, about	2	0	0	,,

The cost of conveyance from the quay would be as follows:—

(a) *On coal despatched from the harbour.*

	Rs.	A.	P.	
Harbour terminal charges (exclusive of freight charged by the railway)	0	6	9	per ton.

(b) *On coal despatched to the stacking ground (instead of the terminal shown in (a)).*

	Rs.	A.	P.	
Hire of wagons	15	0	0	per day.
Cost of haulage for 23-ton broad gauge wagon	6	0	0	for each trip between 6 A.M. and 9 P.M.
12-ton broad gauge wagon	3	0	0	for each trip between 6 A.M. and 9 P.M.
Hire of locomotive, (compulsory if work is done after 9 P.M.)	32	0	0	per night.
Cost of unloading wagon at stacking yard	0	4	0	per ton.

Discharge of a shipload of 7,435 tons of coal direct into wagons, in October 1924, cost the South Indian Railway Rs. 2-7-0 per ton up to the point of interchange between the Port Trust Railway and the neighbouring railway: but railway coal does not pay the harbour dues of 8 annas a ton.

Improvement in handling facilities.—An additional berth is expected to be ready in two years' time.

(*f*) RANGOON.

Method of handling.—All coal is discharged in stream by ship's gear into lighters in which it is taken on shore to be stacked, as a rule, either on the Port Commissioners' stacking ground or on private stacking grounds. It is landed in baskets carried on the heads of coolies.

Stacking grounds.—The Port Commissioners have two stacking grounds, one on the Pazundaung creek, where the land is leased out at Rs. 2-0-0 per 100 square feet per month, and the other at Botataung where the rent is Rs. 3-0-0 per 100 square feet. Accommodation can also be rented at 10 annas per square feet per day, but this is never actually done.

There are, besides, private grounds belonging to different concerns, such as the Burma Railways, Irrawaddy Flotilla Co., Messrs. Mackinnon, Mackenzie & Co. and Messrs. Steel Brothers & Co.

Costs.—A river due of seven annas a ton is levied by the Port Commissioners on all coal landed or shipped except when the coal is for the bunkers of the vessel in which it is shipped. The Port Commissioners levy no other charges unless the coal is landed on their property, when they levy a landing charge of five annas a ton, a small wharfage charge, of about 8 pies per ton, for the use of jetties by lighters and a shipping charge of five annas a ton on coal despatched by lighters.

The average cost of landing coal is given as follows:—

	Rs.	A.	P.
River due	0	7	0
Landing charge	0	5	0
Wharfage	0	0	8
Hire of lighter	0	14	0
Unloading and stacking	0	11	6

These last two items may vary, and the second two are not payable if the coal is not landed on the Port Commissioners' property. The cost of storage is put at 8 pies per ton. Other estimates placed the cost of landing coal at Rs. 2-8-0. For coal despatched by lighter the additional cost is put by the Port Commissioners at Re. 1-10-8. But the Irrawaddy Flotilla Co. estimated the cost on coal from time of discharge to time of bunkering at about Rs. 4-8-0.

Improvements in facilities.—The large proportion of coal landed on private foreshore makes the provision of a deep-water berth or mechanical appliances for handling coal impracticable. The land necessary for future development has been acquired but there is no prospect of work being taken up in the near future.

(*g*) SABANG.

Method of handling.—Coal is discharged from ships alongside the quay in iron buckets, each containing 30 to 40 cwts, by five electrically driven transporters, which are carried by travellers above the storage sheds and lowered into them through hatches in the roof. For bunkering the same appliances are used, but with either buckets or baskets. The coal is stored in sheds with concrete floors.

There is in addition a floating 7½-ton grab crane, used for both discharge and bunkering, and a mechanical bunkering barge which works through shoots

either into hatches or into sideports. Hand labour is also employed both for loading and trimming.

Costs.—All harbour and pilot dues are included in the cost of the coal supplied to steamers calling for bunker-coal.

(*h*) SINGAPORE.

Method of handling.—It is the object of the Singapore Harbour Board to encourage bunkering at this port by avoiding any delay to steamers. The coal is therefore stacked directly behind the transit sheds along the wharves, to enable bunkering to be carried on from the wharf at the same time as cargo is being handled. As a rule therefore coal is discharged alongside the wharf. The coal is handled between ship and stack in baskets of 160 lbs. (14 baskets to the ton). Each basket is carried slung on a bamboo between two coolies. This method avoids breakage and appears to be very satisfactory.

Stacking grounds.—No figures were obtained as to the amount of coal that could be stacked on the various stacking grounds. The total quantity that would be stocked in Singapore, in sheds or hulks, of which there are two, and in the stacking grounds, was estimated at between 100/120,000 tons.

Costs.—The cost of discharge, stacking, and bunkering at the wharf is approximately as follows :—

	Cents.
Wharfage inwards	40
Wharfage outwards	40
Stacking charges, *i.e.*, charges from ships to stack, paid to the Harbour Board	56
Unstacking, removing and loading	90
3 months storage	24
Insurance and tallying	10
TOTAL	$2·60

The charge for stacking is a fixed charge, but the amount payable to the coolies, who are supplied by a sub-contractor, varies between 2 and 6 cents. per basket according to the length of carry, the difficulty of walking the gangways the height of the stack and the amount of work on hand.

If coal is taken out on lighters from the wharf into stream the cost charged by the Port Trust is $1·40 per ton, but for the past two years hardly any coal has thus been shipped.

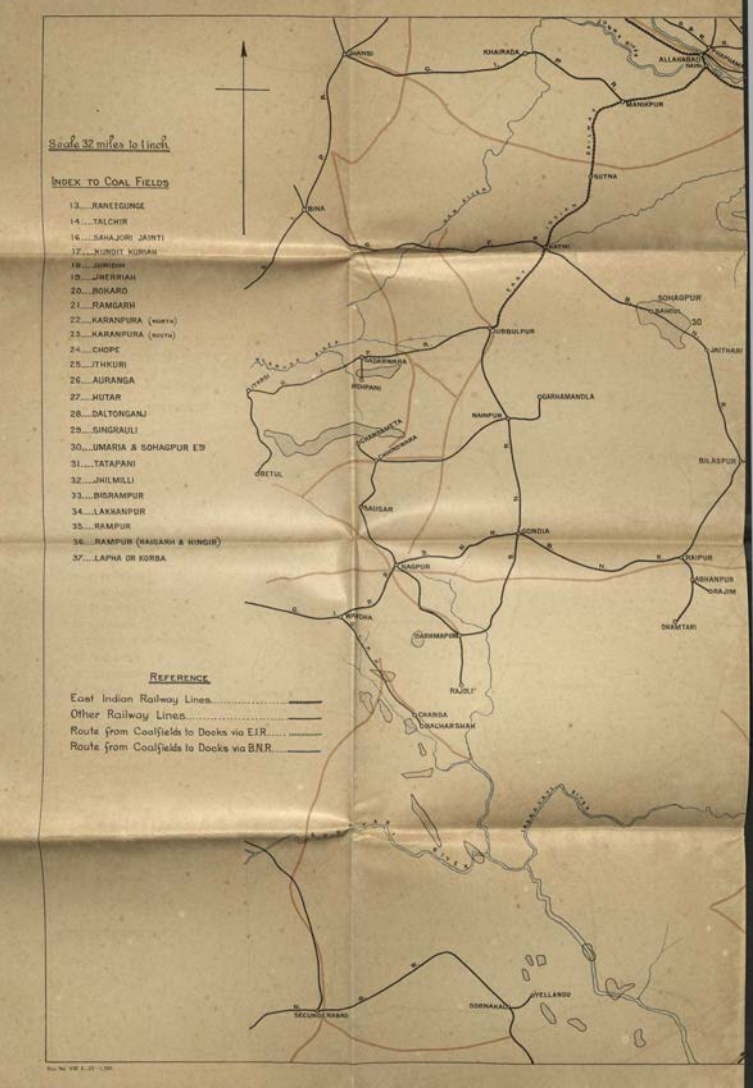
The reduction possible in the cost of handling if coal is transferred from one ship to another in stream, instead of being landed on the wharf, was estimated at $1·50 per ton. As Singapore is a free port there are no dues levied on the steamer or the coal unless the steamer goes to the wharf.

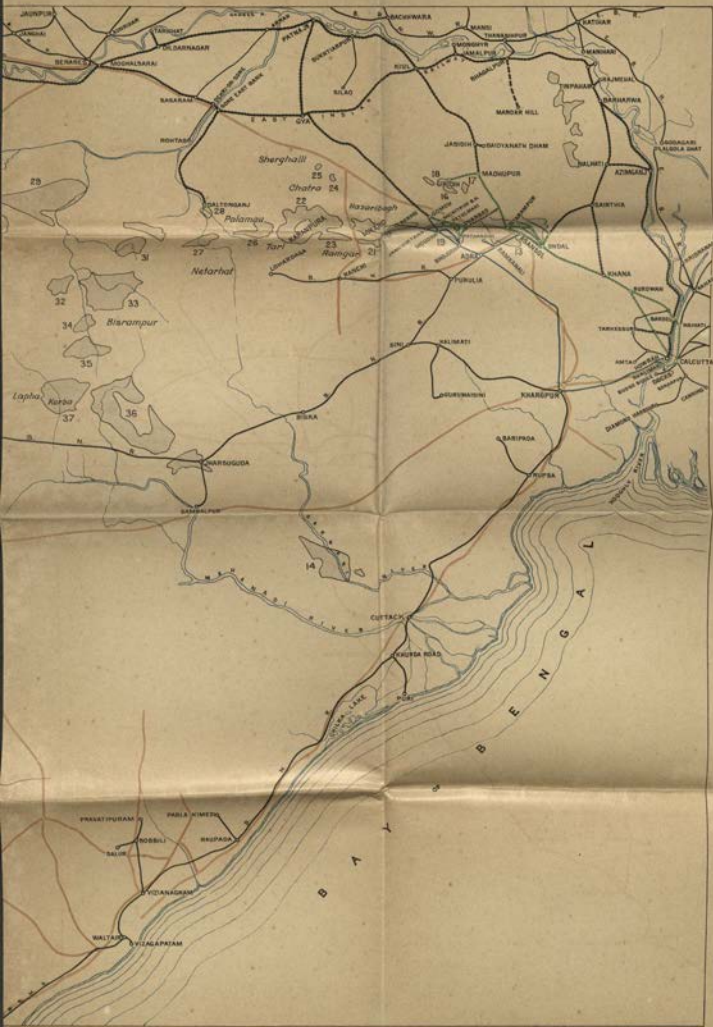
Weighment.—It is usual to weigh coal, because the Harbour Board are under an obligation to deliver as many tons as they have taken over on the wharf. The importer has the option of weighing one basket in five or one in ten on the wharf, and his tallyman is present at the scales to check the work of the Harbour Board's weighman. The quantity of coal delivered into bunkers is calculated on weights thus taken and not on measurement.

Improvement in facilities for dealing with coal.—There are no mechanical coal handling appliances at present. The Harbour Board are considering the possibility of installing a mechanical coaling plant which could lift coal from the storage heap, convey it parallel to the wharf till it is opposite the vessel for which it is intended, and carry it past the transit sheds to the bunders.

Rate of discharge.—The rate of discharge varies very greatly, depending as it does on the number of vessels awaiting discharge. The average per day for July 1924 was 1,467 tons discharged and 853 bunkered.

GIPC—L—449 S. C. C.—27-4-2—1,200.


Scale 32 miles to 1 inch
INDEX TO COAL FIELDS
13....RANEEGUNGE
14....TALCHIR
16....SAHAJORI JAINTI
17....KUNDIT KURIAN
18....JORDON
19....JHERRIAH
20....BOKARO
21....RAMGARH
22....KARANPURA (NORTH)
23....KARANPURA (SOUTH)
24....CHOPE
25....ITHKURI
26....AURANGA
27....HUTAR
28....DALTONGANJ
29....SINGRAULI
30....UMARIA & SOHAGPUR E'S
31....TATAPANI
32....JHILMILLI
33....BISRAMPUR
34....LAKHANPUR
35....RAMPUR
36....RAMPUR (RAIGARH & HINGIR)
37....LAPHA OR KORBA
REFERENCE
East Indian Railway Lines
Other Railway Lines
Route from Coalfields to Docks via E.I.R.
Route from Coalfields to Docks via B.N.R.
JHANSI
KHAIRAGARH
ALLAHABAD
MANIKPUR
SATNA
KATNI
SOHAGPUR
BANDHOGARH
JHARIA
JABALPUR
KATANGA
MOHPANI
NAINPUR
DURGAMANDLA
BILASPUR
BHATUL
WARDHA
GONDIA
RAIPUR
NAGPUR
DHAMTARI
RAJOLI
CHANDA
SECUNDERABAD
DORNAKAL
VIJAYAWADA


A
BAY OF BENGAL
Sherghalli
Chatra
Palamau
Ramgarh
Netarhat
Barampur
Lapha
Kerba
Jashidih
Madhupur
Giridih
Dhanbad
Purulia
Kharagpur
Balasore
Bhadrak
Cuttack
Khurda Road
Puri
Orissa Lake
Visakhapatnam
Waltair
Bobbili
Palkonda
Parvatipuram
Vizianagram
Sambalpur
Bisra
Rourkela
Barsuguda
Baripada
Calcutta
Howrah
Asansol
Barharwa
Sahibganj
Rajmahal
Bhagalpur
Jamalpur
Monghyr
Barauni
Samastipur
Darbhanga
Sitamarhi
Muzaffarpur
Chapra
Gorakhpur
Varanasi
Mughalsarai
Benares
Jaunpur
Sultanpur
Lucknow
Patna
Gaya
Dehri
Rohtas
Sasaram
Katihar
Kursela
Manihari
Sonpur
Hajipur
Barauni
Simaria
Mokameh
Jhajha
Jasidih
Baidyanath Dham
Madhupur
Giridih
Dhanbad
Asansol
Howrah
Calcutta
Kharagpur
Midnapore
Tamluk
Contai
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Balasore
Bhadrak
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Khurda Road
Puri
Orissa Lake
Sambalpur
Bisra
Rourkela
Barsuguda
Baripada
Visakhapatnam
Waltair
Vizianagram
Parvatipuram
Palkonda
Bobbili
Salur
Gadagari Flagstaff Hut
Azimganj
Saithia
Rupnarayan
Kana
Suruwani
Tarkeswar
Amta
Uluberia
Kalimati
Bini
Gurguripini
Rupsa
Barabhum
Purulia
Netarhat
Sherghalli
Chatra
Palamau
Ramgarh
Hazaribagh
Rajmahal
Sahibganj
Barharwa
Mandar Hill
Simultala
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Rajgir
Nawada
Gaya
Dehri
Rohtas
Sasaram
Mughalsarai
Benares
Jaunpur
Sultanpur
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Samastipur
Darbhanga
Sitamarhi
Muzaffarpur
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Gorakhpur
Varanasi
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Jamalpur
Monghyr
Bhagalpur
Bakhwara
Tarapur
Dumraon
Buxar
Ghazipur
Jaunpur
Sultanpur
Lucknow
Gonda
Gorakhpur
Varanasi
Mughalsarai
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Gonda
Gorakhpur
Varanasi

EAST

MAP SHOWING EXT

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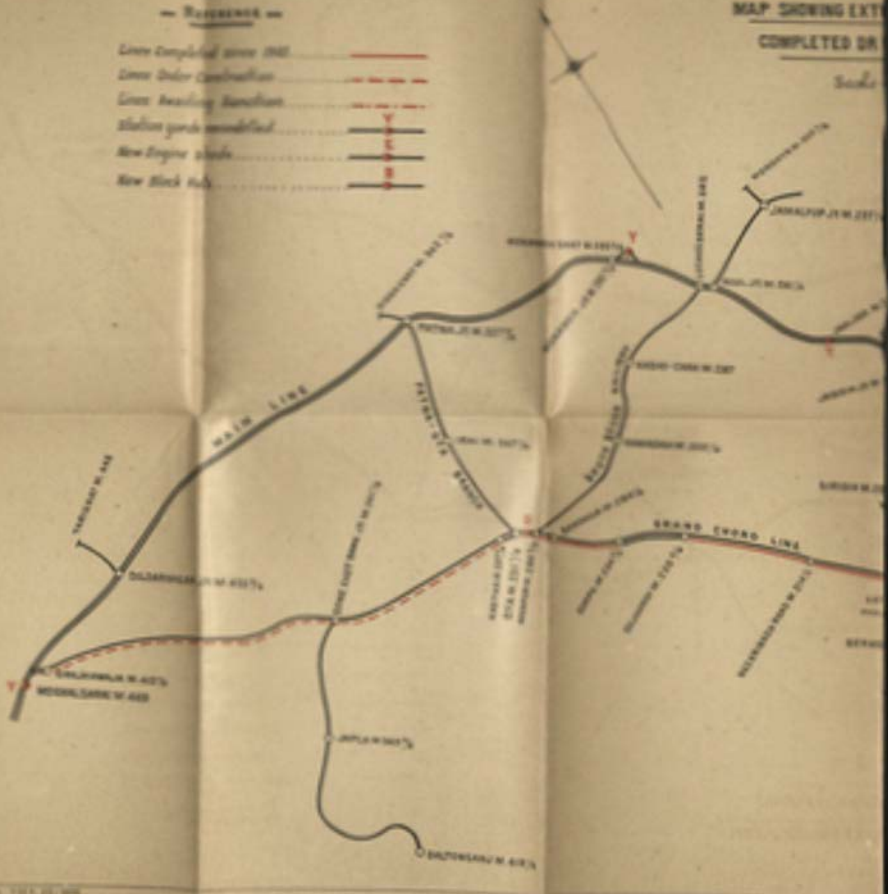


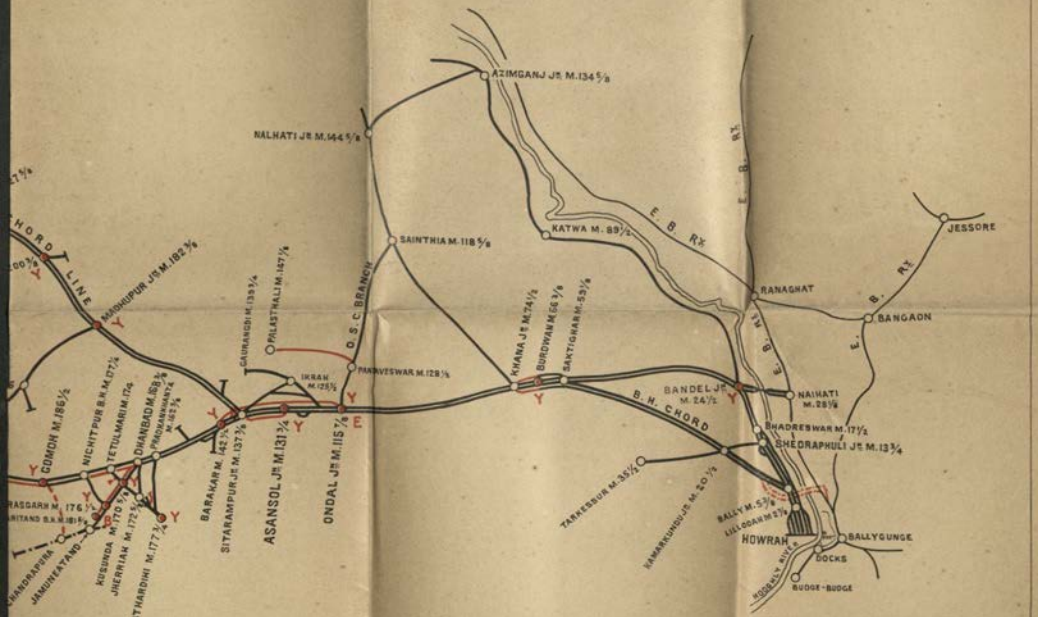
B

INDIAN RAILWAY

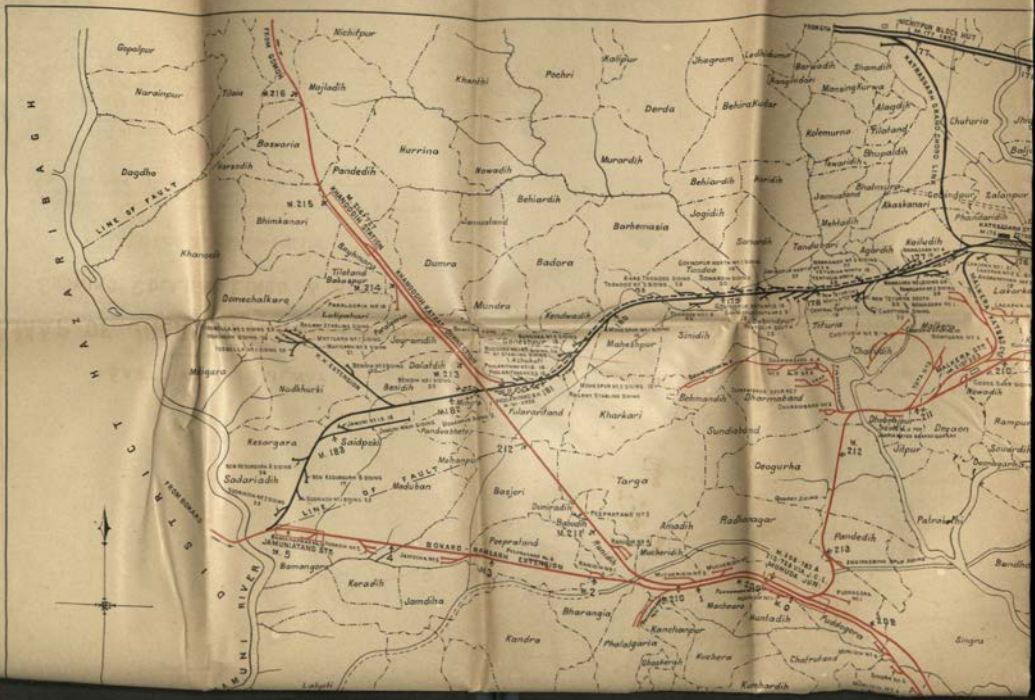
ENSIONS AND IMPROVEMENTS

N PROGRESS SINCE 1921

16 miles to 1 Inch



Heliozincographed at the Survey of India Offices, Calcutta.


HAZARIBAGH
DISTRICT
Gopalpur
Nurainpur
Tilaia
Majiadih
Nichitpur
Khanitki
Pochri
Kaliapur
Jhagram
Ledhidumar
Barwadih
Shamdih
Bangdeodari
Mansingkurwa
Alagdih
Chuturia
Derda
Behira Kudar
Kolemurna
Tilaiand
Bhagaldih
Tewaridih
Baswaria
Kurrina
Pandedih
Kewadih
Murardih
Behiardih
Kuridih
Bhalmura
Jamuadand
Akashanari
Mahkadih
Dagdha
Kharsadih
Behiardih
Jogidih
Barkemasaia
Sonardih
Tandwa
Agardih
Kailudih
Bhimkanari
Khamosh
Dumra
Badora
Mundra
Kendwadih
Sindih
Maheshpur
Tilaiand
Bakaspur
Domchalkare
Lakhpahuri
Jogiandih
Dalaldih
Mangara
Nadhkuri
Benidih
Kesargara
Saidpoki
Sadariadih
Mahanji
Maduban
Pilavaridand
Kharkari
Bokmandih
Dharmabad
Sundishand
Targa
Basjori
Deogurha
Amadih
Radhanagar
Pandedih
Palraidih
Jilpur
Dagaon
Rampur
Sonardih
Peepraland
Mucherdih
Keradih
Jamdiha
Bharangia
Kandra
Phalgaria
Kanchanpur
Kuchera
Chaturdand
Kamhardih
Singra
Bandhdih
Huntadih
Tuddagora
Macheora
Lalgarh
BOKARO RIVER
DAMODAR RIVER
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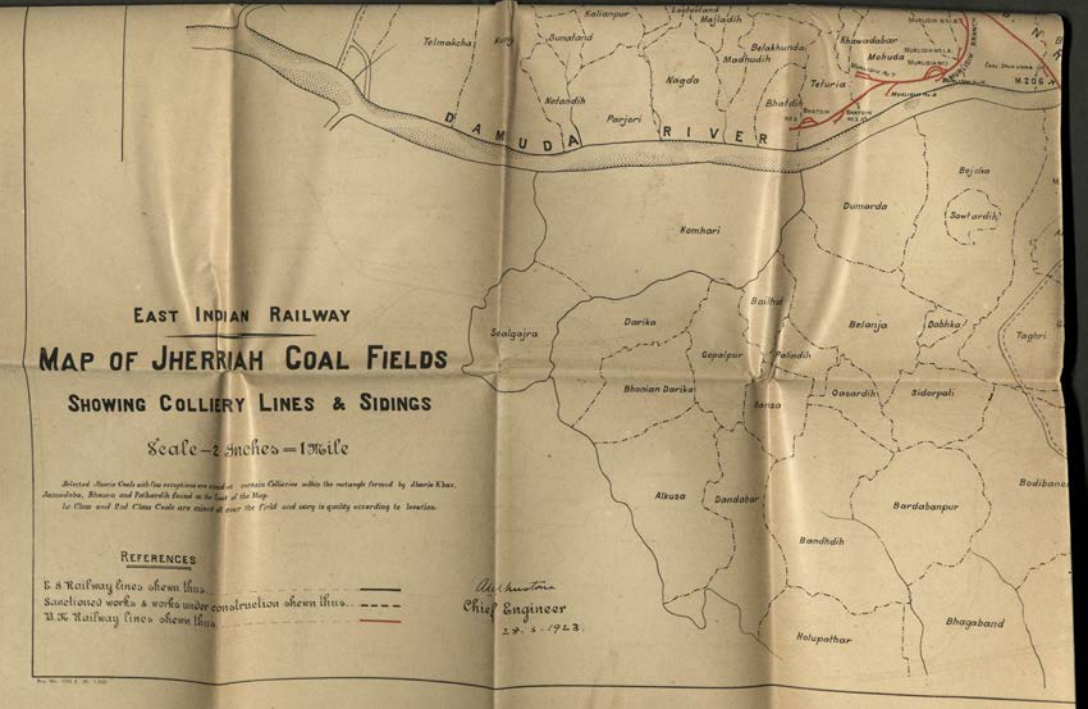
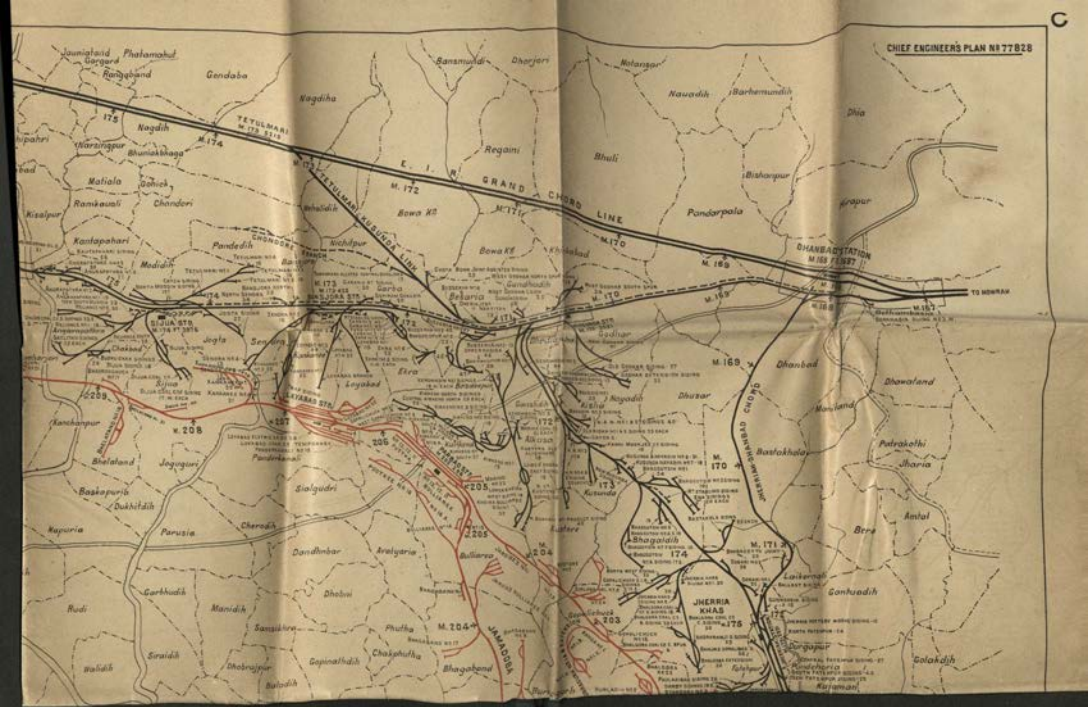
M.2
M.1


EAST INDIAN RAILWAY
MAP OF JHERRIAH COAL FIELDS
SHOWING COLLIERY LINES & SIDINGS
Scale – 2 Inches = 1 Mile
Selected Jharia Coals with few exceptions are found in certain Collieries within the rectangle formed by Jharia Khas, Jamadoba, Bhowra and Pethardih found on the East of the Map.
1st Class and 2nd Class Coals are mixed all over the field and vary in quality according to location.
REFERENCES
E. I. Railway Lines shewn thus
Sanctioned works & works under construction shewn thus
B. N. Railway Lines shewn thus
DAMUDA RIVER
Telmaicha
Kirg
Kaliapur
Loyabad
Majladih
Sunatand
Belakhunda
Madhudih
Khawadabar
Mahuda
Nagda
Teturia
Netandih
Panjori
Bhatdih
M.206
Bejaika
Dumarda
Sawladih
Komhari
Bailhat
Jealgajra
Darika
Belanja
Dabhka
Taghri
Gopalpur
Palandih
Bhanian Darika
Kanzo
Gasardih
Sidarpali
Alkusa
Dandabar
Bardabanpur
Bandhdih
Bhagaband
Kalupathar
Chief Engineer
29. 6. 1923.


CHIEF ENGINEERS PLAN No 77828
E. I. R. GRAND CHORD LINE
TETULMARI
M. 172
M. 171
M. 170
M. 169
DHANBAD STATION
M 169 FL 1357
TO MOHURA
Jauniatand
Phatamahul
Gargard
Ramgarhand
Gendaba
Nagdiha
Bansmuddi
Dharjori
Motansar
Nawadih
Barhemundih
Dhia
Regaini
Bhuli
Bishanpur
Gopur
Pandarpala
Nagdih
Harrisingpur
Bhuniakhaga
Matiala
Gohick
Ramkaunli
Chandori
Kisalpur
Kantapahari
Pandedih
Madira
Behaldih
Bowa KB
Nichdpur
Bowa KE
Khirdakad
Gandhadih
Sarna
Bataria
Gadhar
Dhanbad
Dhanoland
Maniland
Patrakolthi
Jharia
Amtal
Bera
Gonhadih
Golakdih
Karjaman
Dhusar
Bastokhola
Jharia Dhanbad Chord
Sijua STN
Jogta
Sijua
Chekand
Sendra
Ekra
Loyabad
Layabad STN
Kanchanpur
Bhelaland
Jogaguri
Baskapuria
Dukhidih
Kapuria
Parusia
Cherodih
Sialgudri
Dandhbar
Aralgaria
Bullarra
Dhobvi
Garbhadih
Manidih
Rudi
Siraidih
Dhobrajpur
Baladih
Gopinathdih
Chakabadha
Bhagabandi
Jamadoba
Akusa
Kusunda
Rajdera
Bhagatdih
Laikarmati
Jherria Khas
Sijua STN
Sijua
Layabad STN
M 169
M 170
M 171
M 172
M 173
M 174
M 175
M 176
M 204
M 205
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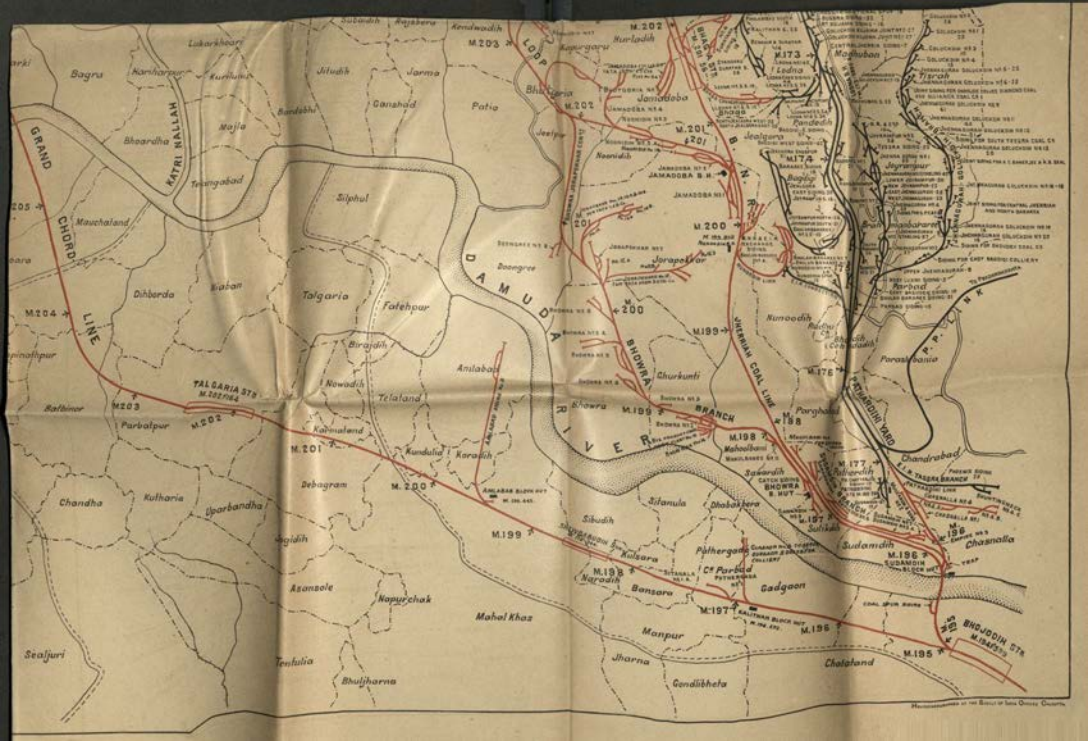
GRAND CHORD LINE
KATRI NALLAH
DAMUDA RIVER
BNR
LOOP
JHERRIAH COAL LINE
BHOWRA BRANCH
P.K.R.
Bagrus
Kankarpur
Lakarkhoan
Kumhanch
Bhoardha
Majia
Teangabad
Bardokhi
Jitudih
Jarma
Ganshad
Patia
Kenduadih
Subandih
Kajorbera
Silphul
Mauchaland
Dihberda
Kuban
Talgaria
Fatehpur
Birajdih
Anlabad
Nowadih
Telaland
Kalmaland
Kundulia
Karaikh
Debagram
Chandha
Kulharia
Uparbandha
Jogidih
Asansole
Napur chak
Mahal Khaz
Sealjuri
Tenfulia
Bhuljharna
Jhanjra
Jamadoba
Jealgora
Pandadih
Jhagrapur
Parbad
Numoodih
Parasbania
Churkunti
Porghaira
Chandrabad
Sawardih
Dhobakhera
Sitanula
Kalsara
Pathergarh
Bansara
Gadgaon
Manpur
Jharna
Gendabheta
Chalaland
Sudamdih
Chasnalla
Bhojudih
Kulkuli
Kurlaidih
Kapurgaru
Jeerpur
Jamadoba
Jealgora
Jhagrapur
Parbad
Numoodih
Parasbania
Churkunti
Porghaira
Chandrabad
Sawardih
Dhobakhera
Sitanula
Kalsara
Pathergarh
Bansara
Gadgaon
Manpur
Jharna
Gendabheta
Chalaland
Sudamdih
Chasnalla
Bhojudih
Kulkuli
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M.203
M.201
M.200
M.199
M.198
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M.196
M.195
M.204
M.205
M.173
M.174
M.175
M.176
TALGARIA STN.
BHOJUDIH STN.
JAMADOBA N.T.
JAMADOBA B.H.
JAMADOBA SIDING
PARBAD SIDING
CHANDRABAD SIDING
SUDAMDIH SIDING
BHOJUDIH SIDING
KULKULI SIDING
KALSARA SIDING
PATHERGARH SIDING
BANSARA SIDING
GADGAON SIDING
MANPUR SIDING
JHARNA SIDING
CHALALAND SIDING
GENDABHETA SIDING
DHOBAKHERA SIDING
SITANULA SIDING
SAWARDIH SIDING
CHURKUNTI SIDING
PARGHAIRA SIDING
PARASBANIA SIDING
NUMOODIH SIDING
JHAGRAPUR SIDING
JEALGORA SIDING
PANDADIH SIDING
JAMADOBA SIDING
KURLAIDIH SIDING
KAPURGARU SIDING
JEERPUR SIDING
BHOWRA SIDING
KENDUADIH SIDING
SUBANDIH SIDING
KAJORBERA SIDING
BIRAJDIH SIDING
ANLABAD SIDING
NOWADIH SIDING
TELALAND SIDING
KALMALAND SIDING
KUNDULIA SIDING
KARAIKH SIDING
DEBAGRAM SIDING
CHANDHA SIDING
KULHARIA SIDING
UPARBANDHA SIDING
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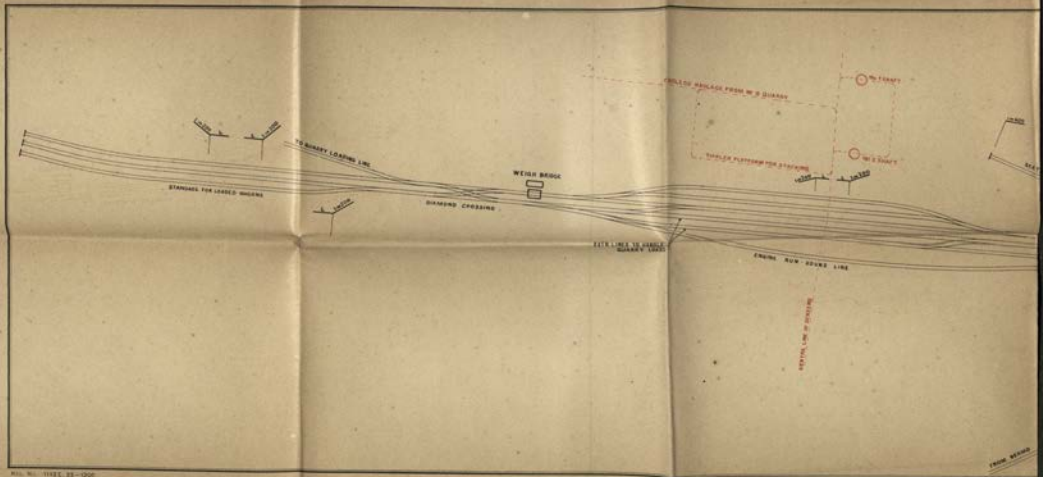
BHULJHARNA SIDING


TO BINARY LOADING LINE
WEIGH BRIDGE
STANDAGE FOR LOADED WAGONS
DIAMOND CROSSING
FROM RUM ROUND LINE

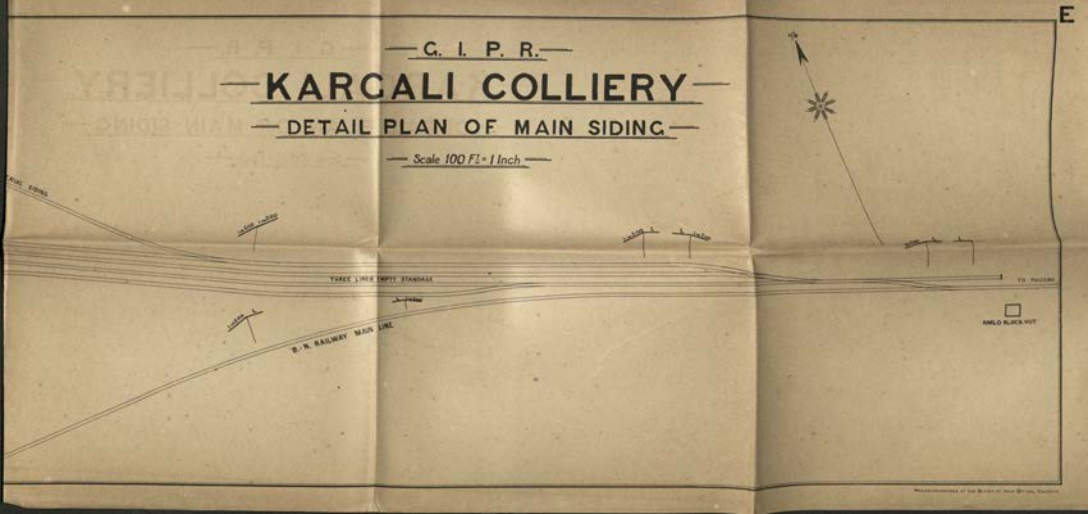
E

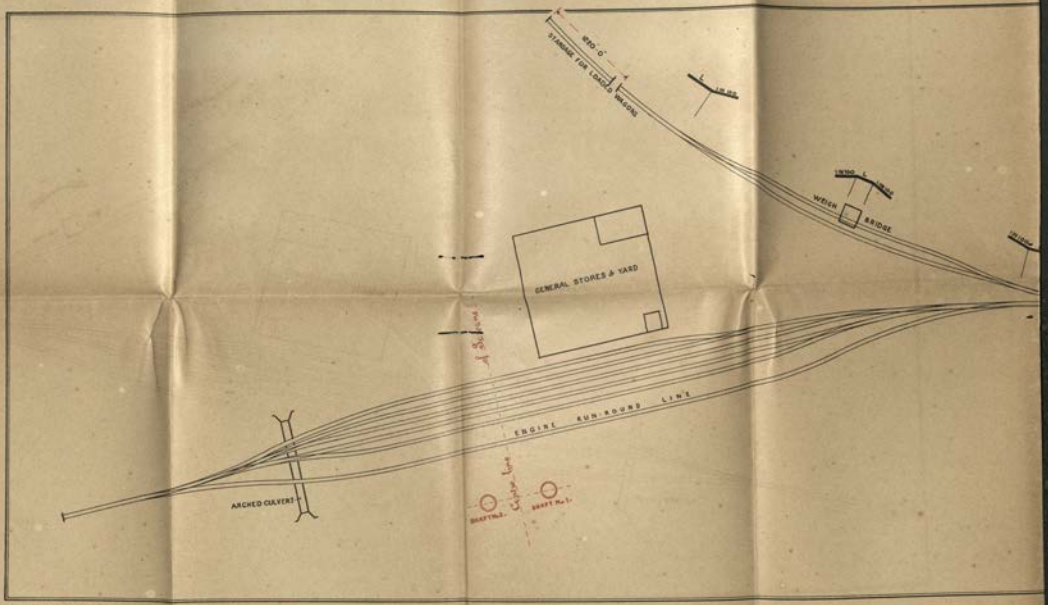
C. I. P. R.

KARGALI COLLIERY

DETAIL PLAN OF MAIN SIDING

Scale 100 Ft. = 1 Inch




WPD 0"
STANDARD FOR LOADED WAGONS
WEIGH BRIDGE
GENERAL STORES & YARD
ENGINE RUN-ROUND LINE
ARCHED CULVERT
DRAFTING
DRAFT No.1

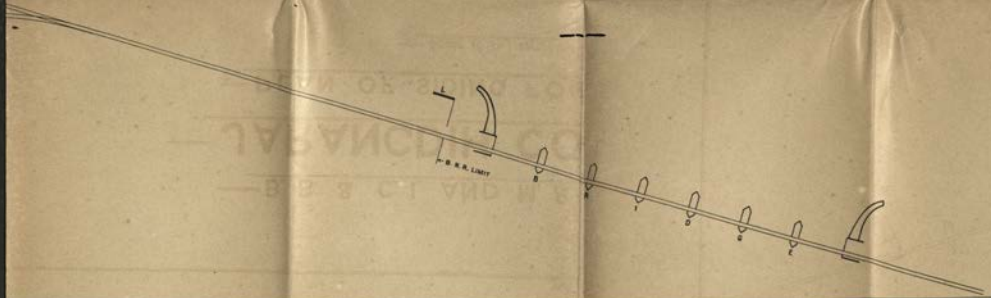
F

B. B. & C. I. AND M. & S. M. RYS.

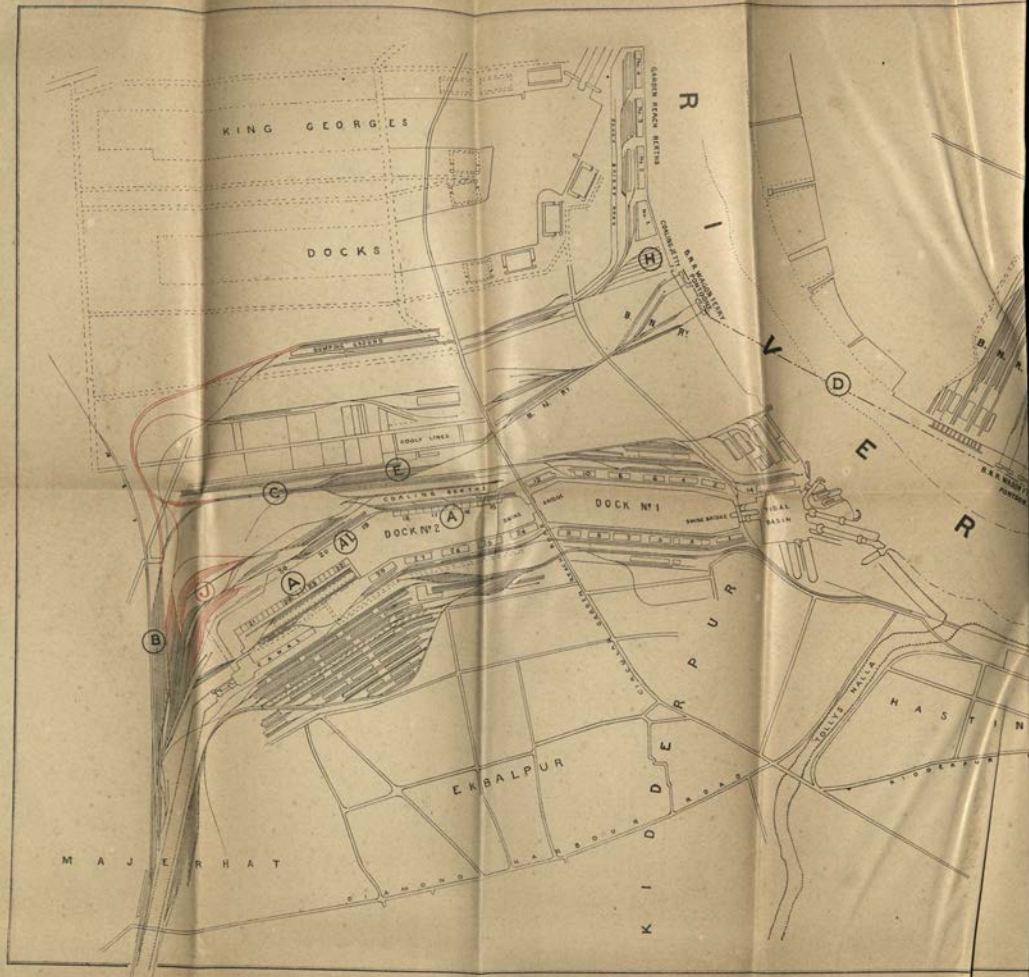
JARANGDIH COLLIERY.

PLAN OF SIDING FOR COLLIERY.

Scale 100' = 1" Inch.



Photolithographed at the Survey of India Offices, Calcutta.


KING GEORGES
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GARDEN REACH REACHES
R I V E R
HOOGHLY
DOCK Nº 2
DOCK Nº 1
COALING BERTHS
SWING BRIDGE
TIDAL BASIN
KIDDERPUR
KIDDERPUR DOCKS
EKBALPUR
MAJERHAT
DIAMOND HARBOUR ROAD
HASTIN
A
A1
B
C
D
E
H
J

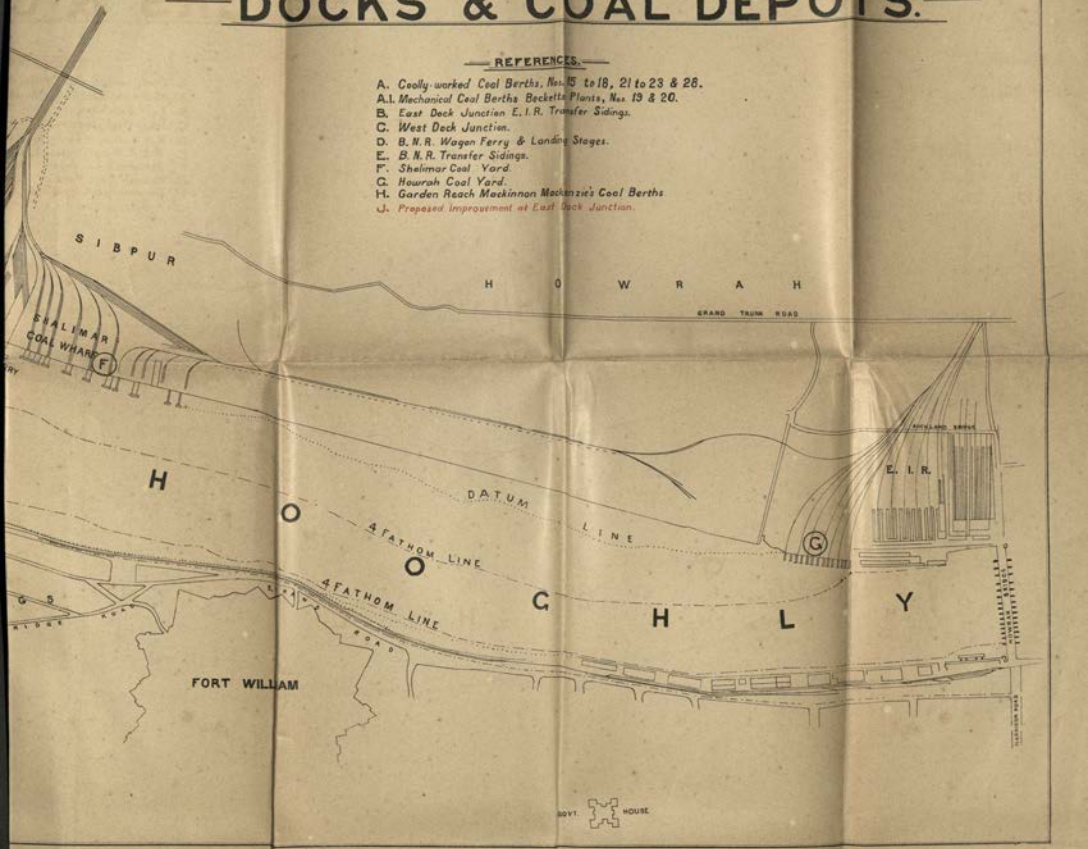
G

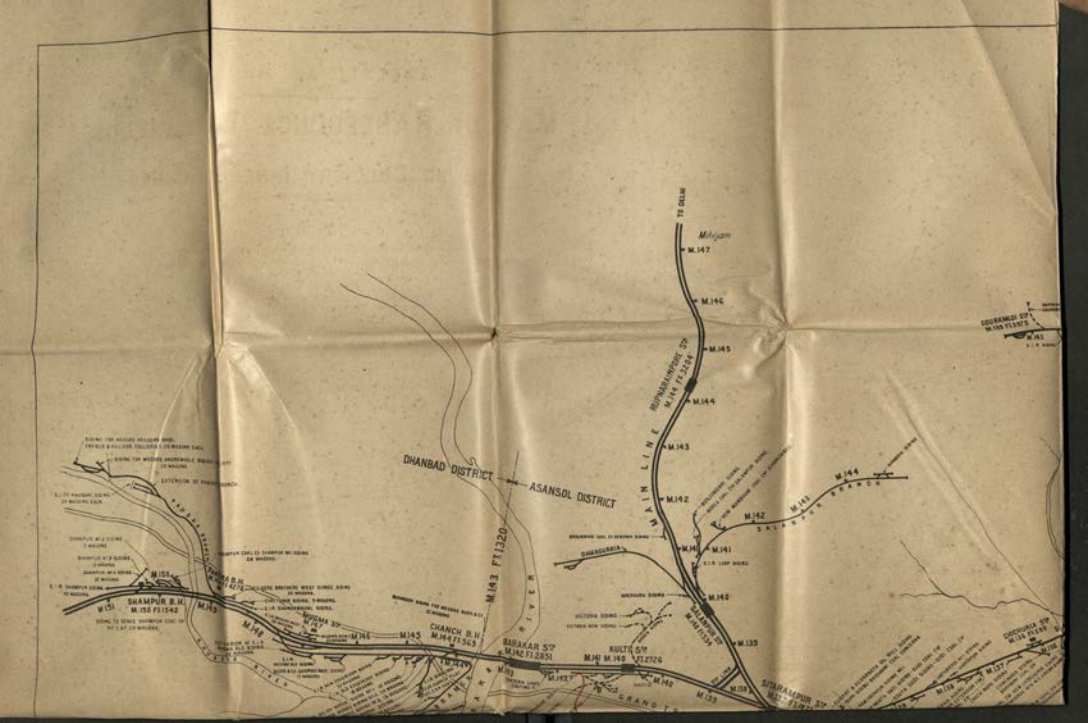
CALCUTTA.

DOCKS & COAL DEPOTS.

REFERENCES.

A. Coolly-worked Coal Berths, Nos. 15 to 18, 21 to 23 & 26.
A1. Mechanical Coal Berths Becketts Plants, Nos. 19 & 20.
B. East Dock Junction E. I. R. Transfer Sidings.
C. West Dock Junction.
D. B. N. R. Wagon Ferry & Landing Stages.
E. B. N. R. Transfer Sidings.
F. Shalimar Coal Yard.
G. Howrah Coal Yard.
H. Garden Reach Mackinnon Mackenzie's Coal Berths.
J. Proposed Improvement at East Dock Junction.

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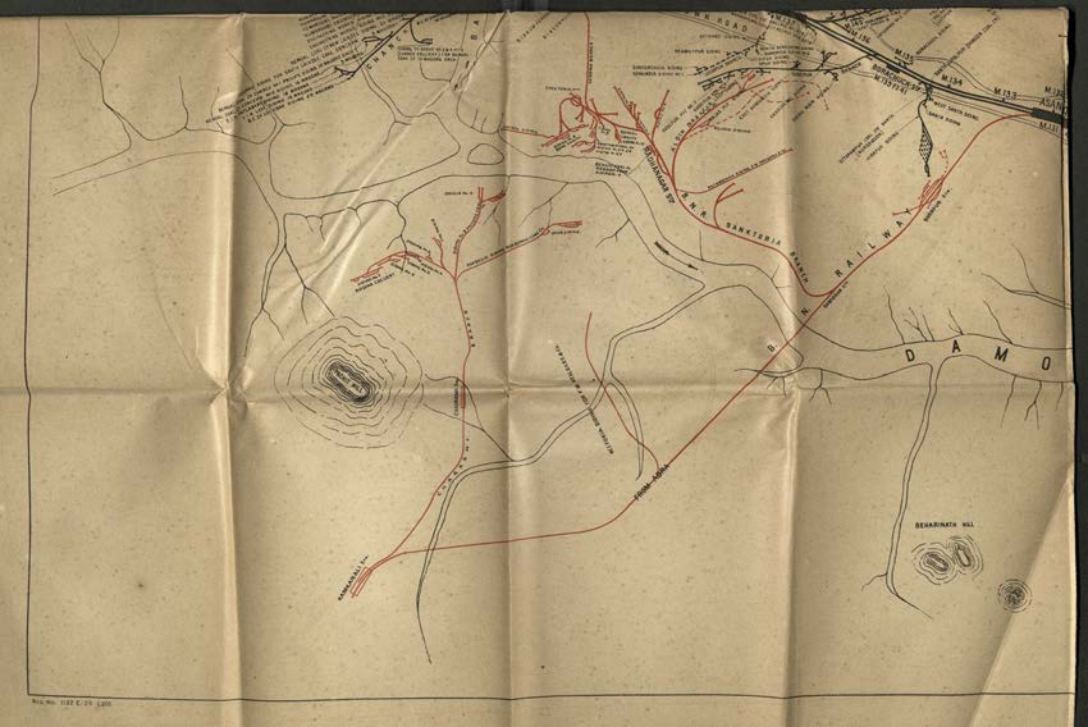
D A M O
BEHARINATH HILL

D

CHIEF ENGINEER'S PLAN-NO 76728

EAST INDIAN RAILWAY

MAP OF RANEEGUNGE COAL FIELDS

SHOWING COLLIERY LINES & SIDINGS

Scale-1Inch = 1Mile.

The Deshergur-Paniate Coals are mined chiefly on the loop between Kiteranger and Topsi,at the Collieries owned by the East Indian Railway to the South of Kiteranger Station and at some of the Collieries served by the Bengal-Nagpur Railway.

REFERENCES

E. I. Railway lines shewn thus .....
Assisted sidings shewn thus .....
Private sidings shewn thus .....
B. N. Railway lines shewn thus .....

Approved
Chief Engineer.
7. 5. 23

PALSIT'S ALL SDG

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KASTA BRANCH

ADJAI RIVER

JONDALGOP

Kapista

Madanpur

Dishna

Darbandopa

Jagmohanpur

Bhuri

Barpahari

RASWAN SDG

SO MADHYA

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CHORD RAILWAY
KHANDARA BR
Khandara
SAINTHIA
BARREJUNCTION
TO CALCUTTA
TO HOWRAH

00108589

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